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PLASTIC SURGERY AT BROOKE ARMY HOSPITAL

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PLASTIC surgery at this center is general in character. It has been used to repair congenital and acquired defects of all body areas. Emphasis is directed, however, especially to the management of regional traumatic defects. Patients transferred to this hospital from almost all zones show excellent early wound care. Primary healing has resulted from the judicious use of the free skin graft. Much extremity tissue has been saved by this procedure. In the head and neck region preservation of soft tissue parts, coupled with early architectural fixation, has allowed the salvaging of many features. Rapid wound healing has permitted these patients to begin a program of reconstruction at an early date and has reduced the number of definitive plastic operations.

In general, reconstructive operations have not been begun until scar tissue has become soft and mobile and all peripheral tissues have returned to normal. Each surgical step has been devised to improve the results obtained by the previous operation. Areas of motion have been treated first. Operations on the nose, eyelids, oral orifice, and neck have been necessary to improve the airway, protect the eyeglobe from exposure and trauma, remove interference with feeding, prevent neck contractures that fix jaw positions, and expose the oral area. In the repair of extremities, the flexor and circumferential lesions have received first attention.

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THE FREE SKIN GRAFT

The free skin graft has been frequently used for definitive repairs.[1] As a type of transplant, it can be obtained in variable thicknesses, up to and including all the corium. The requirements of the recipient site determine the degree of thickness of the skin graft. Thin grafts are indicated when early wound healing is desired. The thicker graft is more valuable for definitive repairs. Each thickness of graft has individual characteristics. The thinner the graft is cut, the more apt it is to take. Thin grafts contract to a greater degree with healing than do thick grafts. Protective coverage of the part is proportionately decreased with the thinness of the graft. For definitive procedures, the choice free graft is one that is cut about three fourths of the skin thickness. At this cutting level, sufficient skin elements are left in the donor area to permit spontaneous healing. The three-quarter thickness skin graft ordinarily can be made to take perfectly only on surgically clean recipient sites. In the past, plastic surgeons have chosen the full-thickness graft for definitive plastic treatment because it offered the maximum coverage to the recipient site, contracted the least during the postoperative course, and usually offered a better color match than the thinner graft. A drawback, however, was the fact that if the graft was large the donor site had to have a split-skin graft from another site to obtain closure. The three-quarter thickness skin graft has now proved definitely equal to the full-thickness cut in regard to fundamental characteristics. It offers an additional advantage that, if cut by machine and properly applied, it will provide a 100-percent take. A full-thickness graft cut by scalpel carries up to a 20-percent loss in take.

Recipient sites for free skin grafts in addition to blood supply also have individual characteristics which influence serviceability of transplant. The stability of architecture influences graft contracture. Thin grafts on nonresilient backgrounds contract little, while those on soft mobile structures contract the most. An example of the former would be the forehead; of the latter, the neck. If a graft contracts, further grafting has to be done to release the contracture. This process continues until surface replacement equals surface loss in volume, area, and quality. This is a practical point to be noted in any attempt to overcorrect a region in anticipation of subsequent contraction. Skin grafts will take if fundamental surgical principles are not violated. In definitive repair, all fibrosis must be removed, hemostasis must be complete, and the graft immobilized in place for 14 days. Clean wounds when grafted do not usually require a change of dressing before the eighth postoperative day.

To be grafted, a granulating region must be relatively free of bacteria. Continuous wet dressings and specific antibiotics

prepare the area. Clinically, when ready for grafting, it will appear bright red in color. It will be nonedematous. There will be no peripheral cellulitis. On such a site a thin-skin graft is more apt to take than a thicker one. The first dressing is done on the fourth postoperative day. The process of drainage by continuous wet dressing technic is then continued until healing is adequate.

The homografting procedure combined with the autograft (figs. 1 and 2) is another method. In the patient shown, seven donors supplied 14 segments of skin, each measuring about 4 by 8

Figure 1. The area to be skin grafted is shown.

Figure 2. Autografts cover buttocks and thighs.

inches. These pieces were united to form a large blanket. Segments of the patient's own skin were applied to the buttocks and the homograft blanket added to cover the remaining granulating area. The whole procedure of application required less than an hour.

Unusual accidental traumas occur now and then. These may present problems in surface coverage. Figures 3, 4, and 5 illustrate such a situation. The patient, a motorcycle casualty, sustained the avulsion of the entire leg, the genital organs, and one half of the bony pelvis. As an emergency procedure, the full-

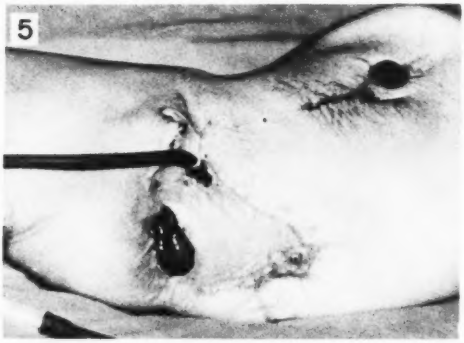

Figure 3. The avulsed area was covered immediately with skin and its adherent subcutaneous tissue. This transplant was cut from the avulsed extremity. In this condition the patient was transferred to Brooke Army Hospital. Figure 4. Debridement was accomplished in stages. A granulating area adequate for grafting developed. Figure 5. Appearance after skin graft.

thickness skin and subcutaneous tissue was removed from the avulsed extremity and used as an immediate coverage. It is obvious that, without a tube to supply blood, such a graft would die; however, it served as a lifesaving procedure and remained in place until sufficient granulations formed beneath the transplant. Débridement was accomplished in stages. The granulating area with preoperative cleansing then presented a recipient site adequate to receive a free skin graft. The closure resulted in a relatively firm diaphragm. This is in contrast to a recent instance in which a patient with a similar condition was treated at the first stage by a free skin graft. The graft take was successful, but the diaphragm so formed was thin and fluctuant. It is possible that a pedicle flap will have to be substituted to complete the repair.

Figures 6 and 7 show a large open wound with granulating surfaces and the result obtained. The avulsion wound of the

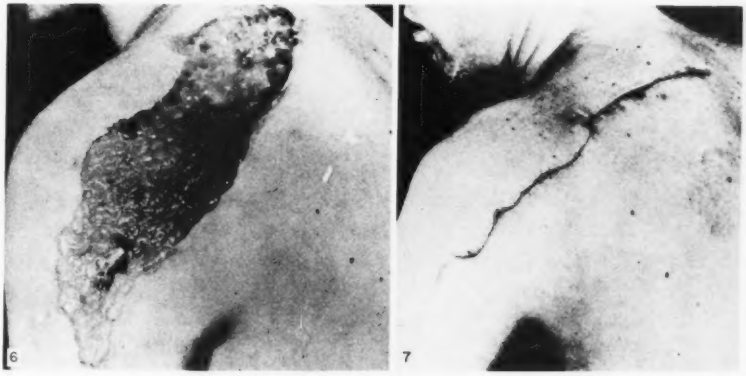

Figure 6. Preoperative traumatic shoulder wound. Figure 7. Final appearance after an intermediate stage of skin grafting.

shoulder was healed by coverage with the free skin graft. Subsequently, this entire segment was excised and the adjacent skin undermined and advanced to produce a single-line closure. This early and late treatment is illustrated in figure 8.

An alternative method of coverage is accomplished by excision of all granulations and application of a skin graft to the new bed. The method is applicable for a burn of an extremity. A tourniquet applied above the lesion can make the field almost bloodless. With the use of antibiotics, a three-quarter thickness type of graft will take. Results may then be such that no subsequent definitive skin graft will be necessary. This eliminates much

hospital time and subsequent operative procedures (figs. 9 and 10).

Two methods of handling the dermatome are shown in figures 11 and 12. In the former, the skin graft removed from the drum is split. This method of resplitting skin grafts has been described by Zintel, Marcus, White, and Dupertius. It multiplies the donor

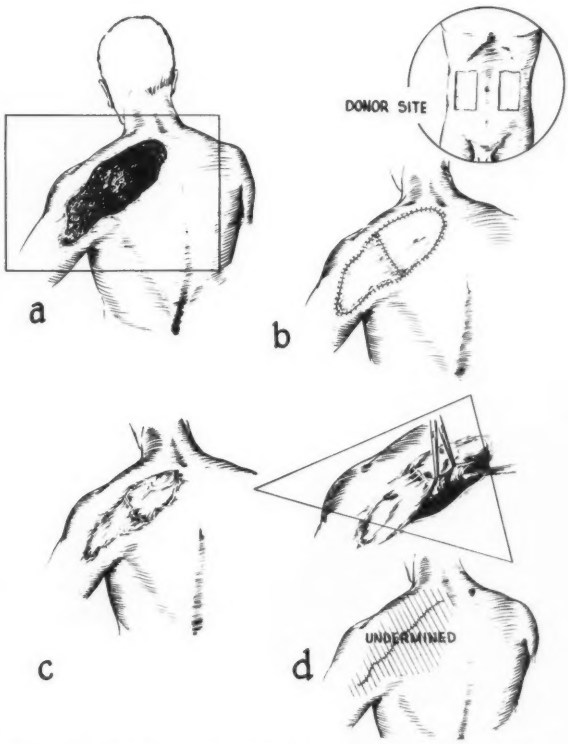

Figure 8. (a) illustrates the first stage; (b) the method of wound healing; (c) the entire grafted area excised; and (d) normal integument united.

material available and may eliminate the necessity of homografting. In the latter procedure, a connected double-drum length of skin is cut. The use of an interposed x-ray film strip mutually adherent to skin and drum gives more stability to the graft for handling. Thinner grafts, if needed, may be cut using the interposed film. Figure 13 illustrates the length of skin graft that can be obtained.

In the definitive or late stage, surface repair is indicated as shown in figures 14 and 15. The residual scar contracture of the neck was excised and the denuded area covered with a three-quarter thickness dermatome-cut graft. The schematic drawing, figure 16 shows the method of application, using vaseline gauze directly over the attached graft, followed by a superimposed

Figure 9. A third-degree burn healing by granulation but with extremity contracture. Figure 10. Continuous ankle traction preoperatively prepared the extremity. Three dermatomes of skin were applied in transverse position after excising granulation tissue. This is a three-quarter thickness type skin graft.

moistened cotton layer cut to pattern shape. These two layers are firmly approximated to the recipient site stent fashion, using gauze fluffs. The peripherally placed long sutures fix the modeled pack in place, pulling the recipient site and graft together as an immobile unit.

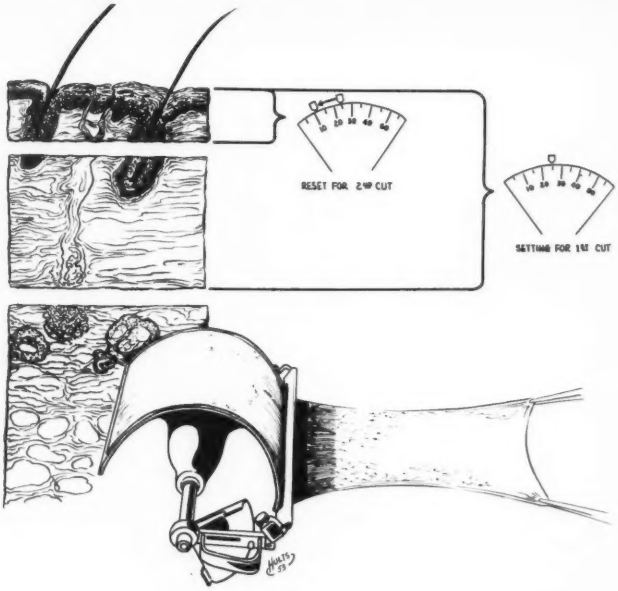

Figure 11. Diagrammatic representation of resplitting a skin graft for increased surface coverage when donor material is limited for the early healing phase.

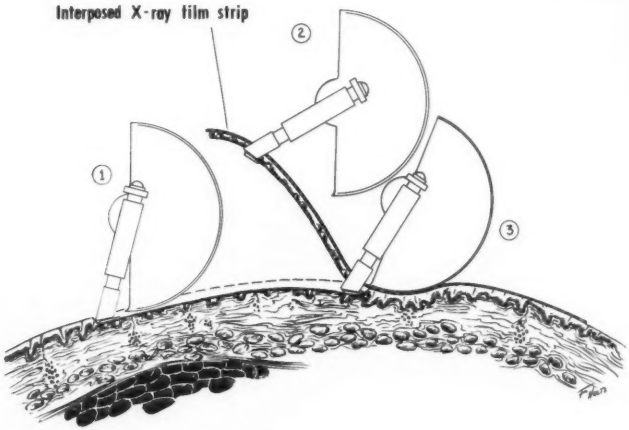

Figure 12. The method of drum repositioning to make the cut continuous. This is useful, as well, for the thicker cut grafts used in definitive repairs.

Figure 13. A double-drum length of skin obtained by repositioning the drum of the dermatome.

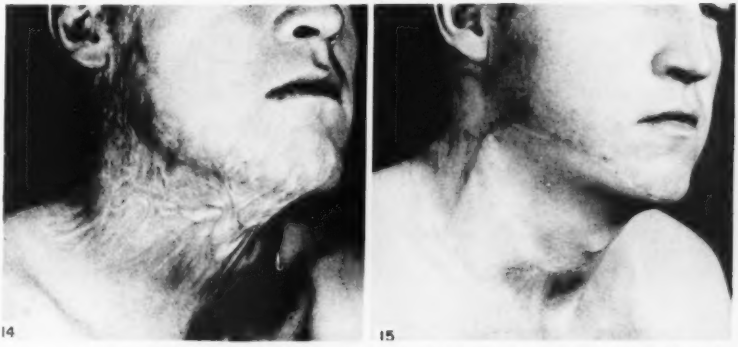

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Figure 14. Preoperative appearance of old healed burn scar contracture of neck.
Figure 15. Repair by excision of limiting cicatrix and substitution skin graft.

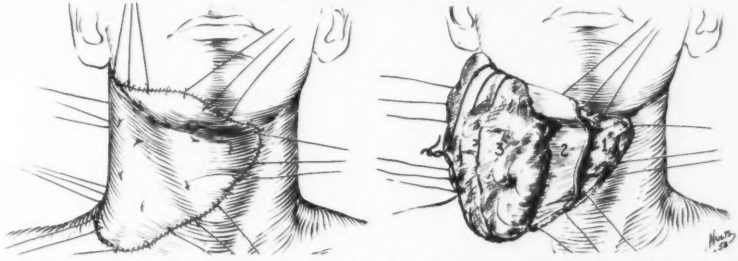

Figure 16. Method of stent application for graft fixation: (1) vaseline gauze placed directly over attached graft; (2) moistened cotton layer cut to shape; (3) gauze fluffs firmly approximated to recipient site stent fashion.

In children, the institution of free grafts for repairs follows growth curves. Ordinarily it is best to wait as long as possible for complete scar softening before definitive repairs, but the surgeon must always act before serious contractures occur.

Figure 17 shows a scar defect involving the elbow and cubital fossa region. The anterior contracture was removed by excising the limiting contracted scar and supplying normal coverage. The free graft was obtained from the abdomen and was fixed on the arm stent fashion. This eliminated the circular bandage pressure method and its concomitant circulatory hazards.

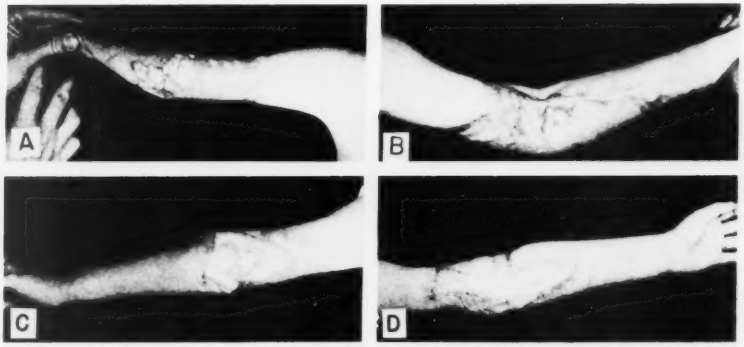

Figure 17. (A) *and* (B) *Residual scar defects in extremity of a child; the elbow and cubital fossa are involved.* (C) *and* (D) *A three-quarter, continuous-piece skin graft was used for both areas. Margins of skin graft joining recipient borders do not cross flexion folds.*

In hands, free graft coverage is always best. This type of skin graft would not be indicated, however, when intrinsic repairs are necessary. In this situation, a pedicle flap would be required. Figure 18 shows skin graft substitutes for palm losses.

THE TUBE PEDICLE

Skin tube pedicles as separate units have been frequently employed when coverage by open flap could not be conveniently designed. The skin tube offers a clean, healed soft tissue transplant having migratory features not otherwise attainable.[2] The construction of an abdominal skin tube and migration by intermediate carrier is shown in figures 19 and 20.

Figure 21 shows the result of this procedure in a patient who had sustained a high voltage current trauma. In 21A there is a loss of skull in the occipital area. The central dural protrusion has been free skin grafted. In 21B, a layer of abdominal skin with its subcutaneous tissue has grown into place as coverage. The soft tissue coverage reconstruction is complete. The final stage will

be a bone graft transplant from the ilium to the skull. The flap coverage forms an adequate soft tissue bed for this construction. The flap of tissue prepared initially before transfer, as shown in the diagrams, must be undermined completely, care being taken not to buttonhole the fascia. Complete hemostasis, not only in the fascia area but also in the base of the flap, is imperative. If hemostasis is neglected or if its absence is masked by procaine hydrochloride and epinephrine anesthesia, the results will be disastrous. The tissue flap properly prepared has its cut edges united, forming the skin tube. Closure of the subjacent denuded

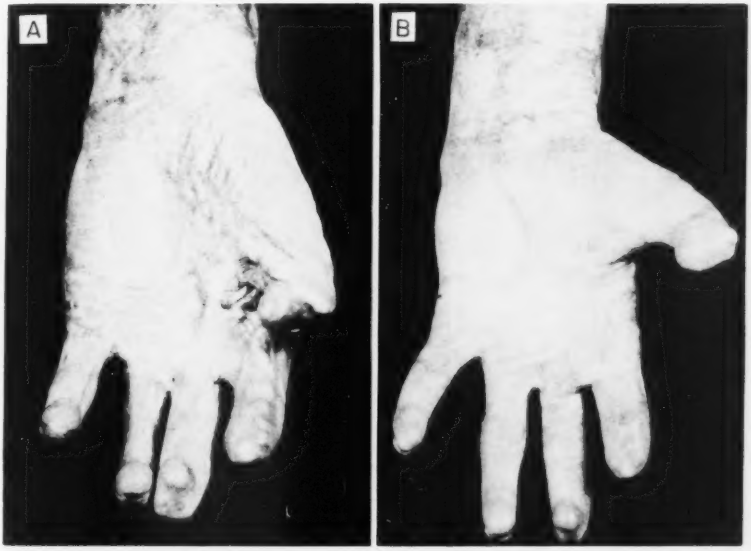

Figure 18. (A) *and* (B) *Almost the entire palm of an adult has been resurfaced.*

area can be brought about by a variety of methods, depending on the location, the size of the tube formed, and the personal experience and training of the surgeon. When tubes are small, adjacent undermining of soft tissue mobilizes it for closure. This, if done, should always be accomplished without tension. If tension is present, healing will usually occur with scar formation. If the tube is to be as large as that shown here, closure is best by free graft. The periphery of the graft is mattress-sutured to the skin and subcutaneous tissue of the recipient border. The free graft is approximated and fixed by a form-fitting stent-type dressing. Prior to transfer to the recipient site, large tubes must be tested for adequacy of circulation at the end to be moved, by means of rubber band constriction or by delay transfer procedure. After a new blood supply to the tube is established from the wrist, the structure can be transported.

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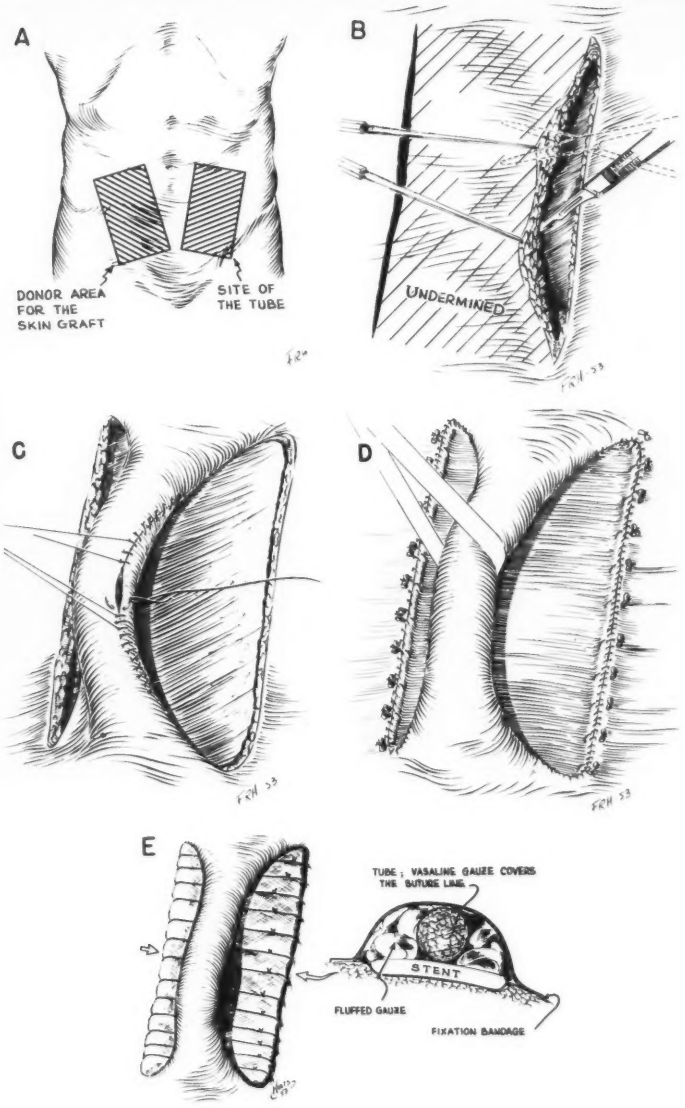

Figure 19. (A), (B), (C), (D), *and* (E) *Abdominal location of a tube pedicle and method of construction. A skin graft from the opposite side of the abdomen was applied to the raw donor area* (C), *held in place by mattress sutures* (D), *and fixed with a stent dressing* (E).

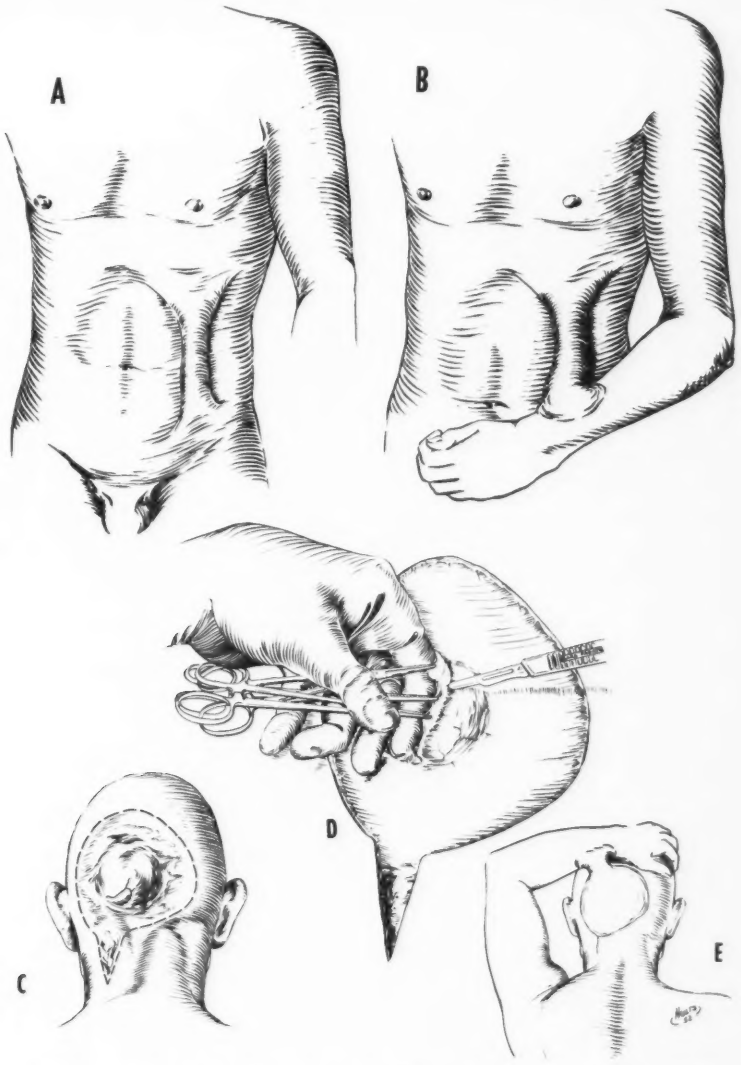

Figure 20. (A) *and* (B) *The finished tube ready for end disengagement. Note its broad attachment to the intermediate carrier.* (C) *and* (D) *Field preparation for the flap. Skin graft dissected from dura.* (E) *The transplant coverage to the recipient site.*

An arm tube flap is applied as a forehead soft-tissue reconstruction (fig. 22). In the patient shown in figure 23, a bone graft to complete skull continuity was also needed. A prosthetic eye is in place. In some situations, residual soft tissue is adequate so that only bone is necessary to complete the reconstruction (fig. 24). Bone grafts are usually taken from the ilium.

Figure 21. (A) *Preoperative appearance of healed wound from electrical trauma. The skull bone was lost. The dura was covered previously by skin graft.* (B) *Appearance after coverage with skin and subcutaneous abdominal tissue. Transportation shown in figure 20.*

Intermediate carrier, such as the forearm for transfer of skin tube or flap grafts, occasionally may be needed in jaw reconstruction, where massive bone grafts are necessary to rebuild the mandible (fig. 25).[3-5] The abdomen may be the preferable site for obtaining soft tissue substitute because it is the thickest material at hand. The soft tissue skin surface of the transplant rarely matches the adjacent facial skin. To improve the facial appearance after architectural repair is complete, the surface pedicle skin can be excised and the adjacent facial skin mobilized over the summit of the added subcutaneous tissue (figs. 26 and 27).[6-8] This cosmetic procedure is performed after the bone graft take is complete.

THE OPEN FLAP SKIN GRAFT

The open flap skin graft differs from the tube in that it remains open in continuity. The raw areas, both donor and free flap base, are free grafted in order to obtain a completely healed lesion postoperatively. In cases where all denuded areas are "skin

Figure 22. Tube formed on arm freed at proximal end after delay procedures is attached as coverage replacement for forehead defect.

Figure 23. (A) *Preoperative appearance of forehead. There is frontal bone loss replaced by cicatrix and enophthalmos is present.* (B) *Appearance of a tube flap after bone graft reconstruction and placement of a prosthetic eye.*

Figure 24. (A) *Preoperative appearance of forehead; adequate soft tissue bed is present.* (B) *Postoperative appearance of forehead; bone graft for skull defect taken from the ilium.*

dressed," the pedicle on section can be immediately embedded. The second operation thus completes the procedure.

The abdomen is the common site for open flaps. In the wrist defect shown in figure 28, a free skin graft produced early healing, eliminating the fibrotic phase. It was necessary to substitute a flap in order to have soft tissue coverage that would ensure an adequate soft tissue bed for intrinsic repair. Figure 29 shows an arm defect requiring bone graft. The soft tissue was

Figure 25. (A) *Preoperative appearance. There is loss of cheek tissue and bone loss in body of mandible.* (B) *A tube pedicle transplant formed on the abdomen is migrated, using forearm as intermediate carrier.*

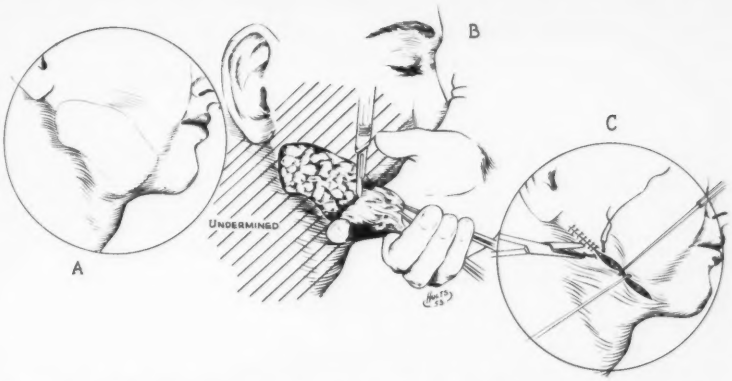

Figure 26. (A) *Flap replacement for cheek tissue, a poor color match.* (B) *Surface of pedicle skin may be excised leaving transplant subcutaneous tissue in place.* (C) *Adjacent cheek undermined and loosely united over summit.*

Figure 27. (A) *Appearance of patient before procedure shown in figure 26.* (B) *Final appearance.*

inadequate. A bone graft in this material would likely fail. A wrap-around open skin flap was substituted to provide an adequate bone graft bed.

In general, skin flaps are constructed so that they completely cover the defect. They are attached without tension, and in a manner so that the free area of the flap joining the body and completing the vascular continuity does not bend or kink. If this allowance is not observed, nutritional supply is jeopardized. Small, sharp bends may, if subjected to subsequent edema, be

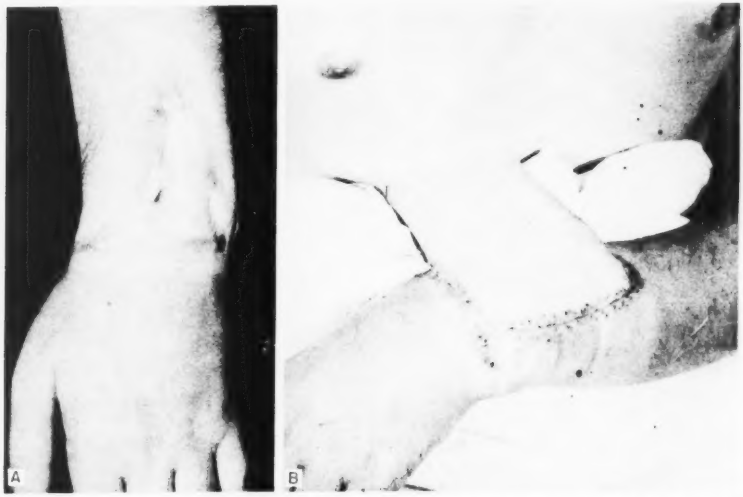

Figure 28. (A) *Preoperative appearance of wrist defect; early healing by skin graft.* (B) *Abdominal flap replaces skin graft in preparation for intrinsic repair.*

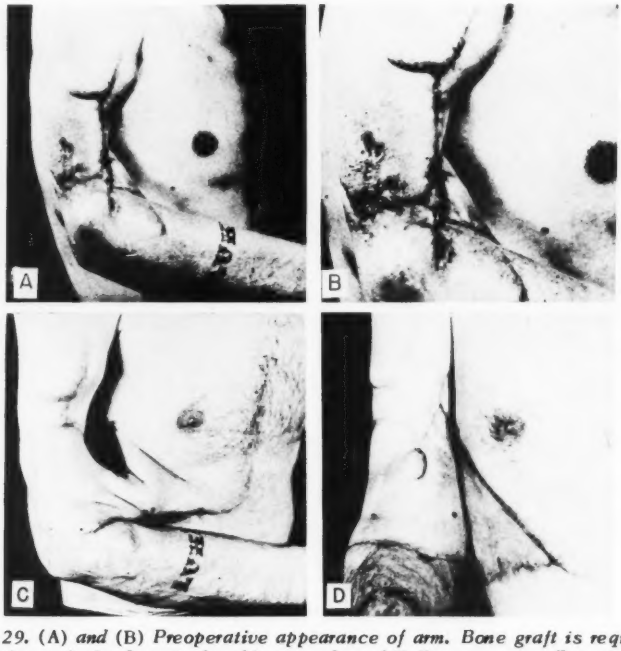

Figure 29. (A) *and* (B) *Preoperative appearance of arm. Bone graft is required. Soft tissue is inadequate for this procedure.* (C) *Reverse open flap attached for purchase in wrap-around procedure.* (D) *Transplantation completed.*

converted into pressure kinks which will destroy the vascular supply to the transplant. The periphery of the flap should be carefully approximated to the wound circumference.

The anterior surface of the chest offers a flap of thinner character than the abdomen and may be the choice for certain defects of the hand. Complete avulsion of the integument and tendon fascia in many places, involving the index and long fingers of the hand, was treated by immediate insertion of the digits into a skin pocket (fig. 30). The definitive procedure consisted of removing enough attached thoracic skin and subcutaneous tissue to completely wrap around the fingers. In this case, three delay procedures were believed necessary before complete detachment. This procedure today is an uncommon one. If skin and subcutaneous tissue is needed, a tube-in-one as a transplant method would be preferable. Retention of this digit without sensory feeling is debatable.

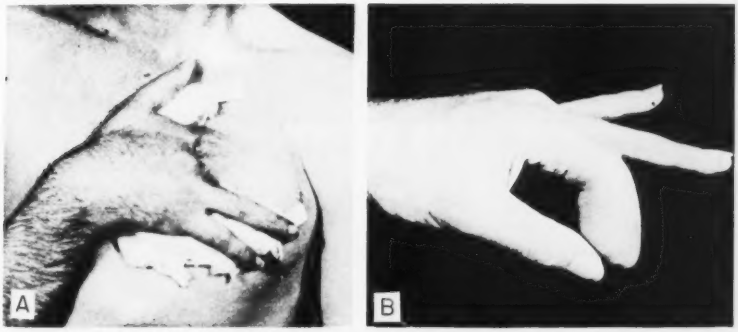

Figure 30. (A) *Deep surface avulsion necessitated flap coverage. With the pocket method, it is more difficult to preserve cleanliness. The tube-in-one method is preferable.* (B) *Final appearance.*

The open jump flap popularized in World War II has been used frequently and seems to be a somewhat faster procedure for the transportation of large tissue masses than in certain combined flap types. This, however, is variable, because much depends on the individual operator.

Figure 31 shows the result of a jump flap transfer in repair of a lower abdominal defect. The technic of flap attachment to the intermediate carrier is illustrated in figure 32. The raw surfaces of the flap had been skin dressed. Three delay procedures were used before the transfer to the recipient site. This latter was prepared by removing the cicatrix and skin graft covering the peritoneum. This long, open flap is a modification of the broader type transfer.

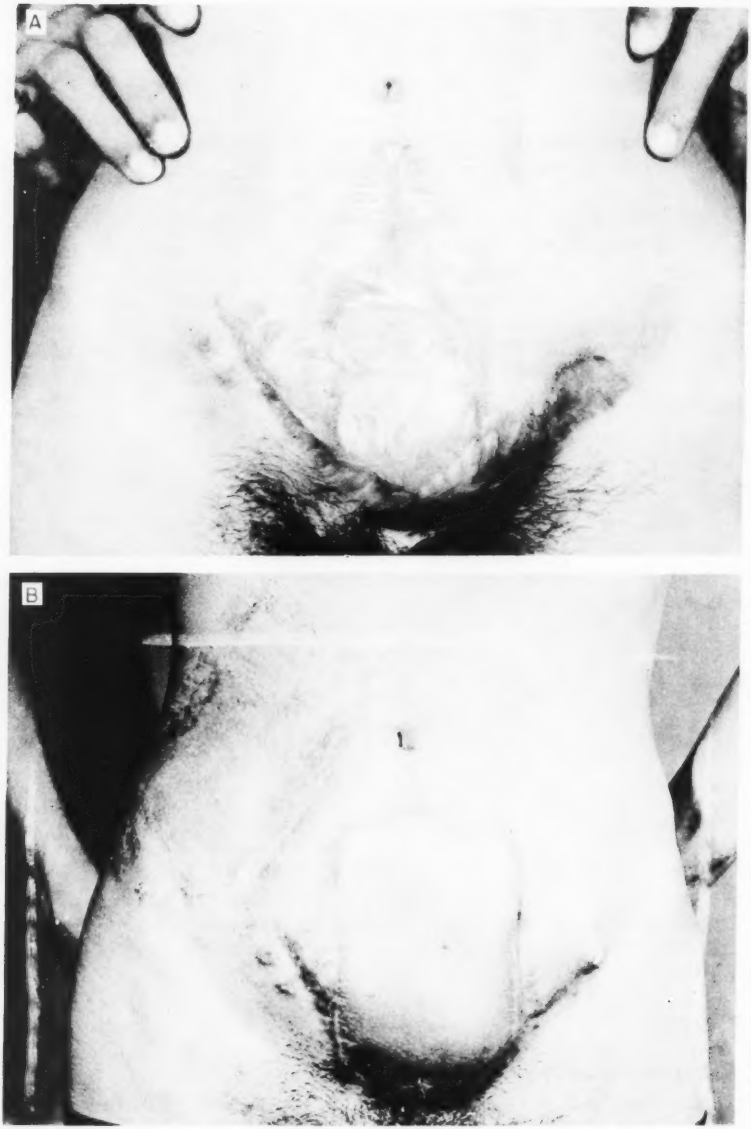

Figure 31. (A) *Preoperative appearance of lower abdominal defect. The peritoneum is covered with scar and previous skin graft.* (B) *Postoperative appearance.*

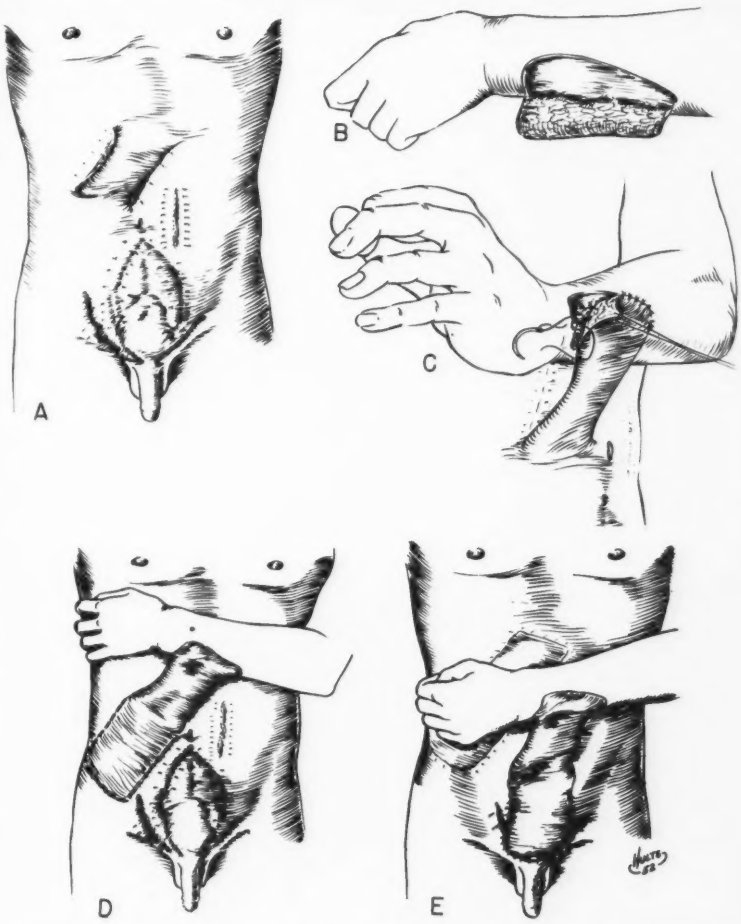

Figure 32. (A), (B), *and* (C) *The first stage of construction of the long flap and its attachment to an intermediate carrier.* (D) *and* (E) *Method of transfer. The dotted lines* (E) *are the summation of delay procedure incisions.*

Figure 33 shows the results of resurfacing both legs in preparation for bilateral bone grafts to the tibia. One extremity, having a rather large defect, required a transference of soft tissues that would cover about two thirds of the lower leg. The method is shown in figure 34. The left leg, having a smaller defect but requiring good coverage, was repaired by tube pedicle transplant from the abdomen.

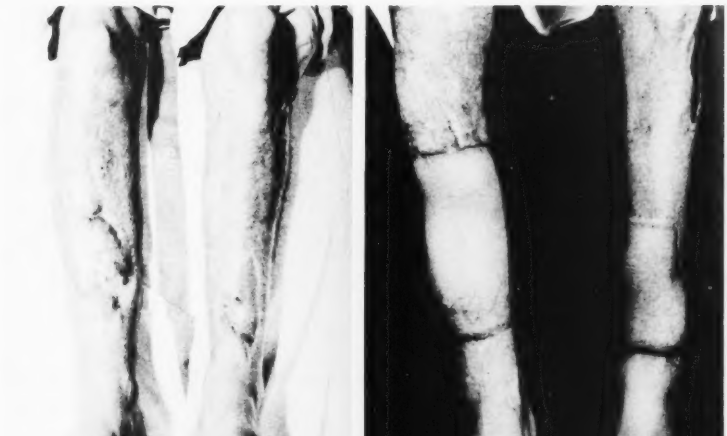

Figure 33. (A) *Preoperative appearance. Both leg wounds have been skin dressed to produce early healing.* (B) *Final result. Left leg surfaced using abdominal tube pedicle; right leg, by use of an open jump flap.*

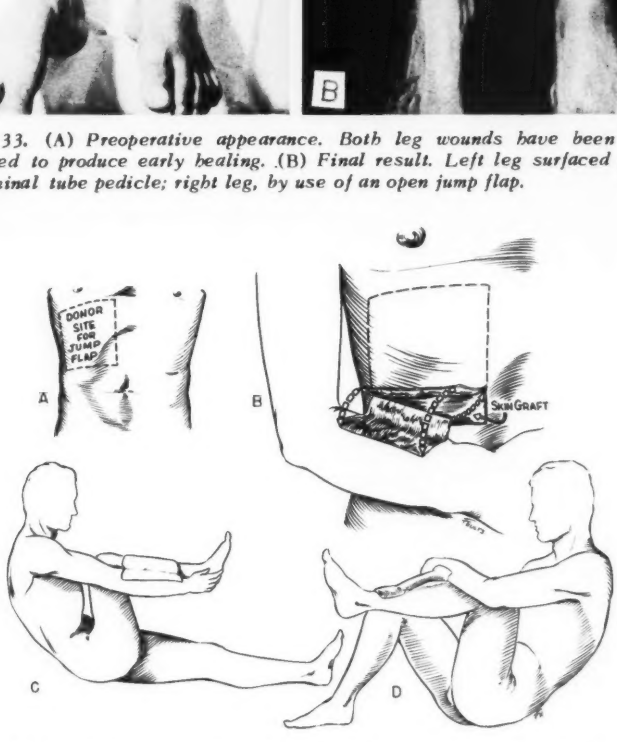

Figure 34. (A), (B), *and* (C) *Procedure used to surface right leg.* (D) *Left leg. Same case as in figure 33.*

In resurfacing a lower extremity with deep surface defects, several methods have been found satisfactory. The immediately rotated flap has been useful with a skin graft covering the denuded site. This type of tissue transfer properly done carries added circulation to the recipient area. Parallel double pedicle shifts can sometimes be used where lesions are susceptible to these reparative procedures. Rapid repair, shortened convalescence, and facilitated postoperative care are the benefits of both these methods.

The cross-leg open skin flap has been used and can be a one-stage procedure depending upon its location. In general, for lesions on the lateral leg or foot, cross-leg skin pedicles will have to be located in situations where, because of blood supply, a delay procedure is necessary to augment vascularity. Meticulous surgical care is paramount. An improperly or inadequately delayed flap will subsequently show marginal or continuity losses. Flap destructions due to improper design or surgical technics are dreadful things and greatly lengthen hospitalization time.

By and large, lower leg skin flaps are easier and more certain to be successful than thigh transplants. Thigh skin flaps are indicated, however, when a larger amount of subcutaneous tissue is required. They may also be indicated where a cross-leg flap has been previously lost, or there are amputation prohibitions. Inner thigh skin tubes and reverse suprapatellar flaps in general are successful.

An ankle defect was repaired by a thigh skin flap (fig. 35). The position of flap attachment is shown in figure 36. A plaster splint immobilized the legs. An avulsion wound of the foot requiring not only intrinsic repair but also adequate surface protection against subsequent trauma is shown in figure 37. The cross-leg flap technic is shown in figure 38.

An infrequent use of the open calf flap is shown in figures 39 and 40. The split distal end allows the transplant to cover a bilateral defect of the ankle. Figures 41 through 43 show a thigh tube pedicle used in the repair of a defect of the heel surface. Figure 44 shows the position of attachment.

Skin tube pedicles used to repair defects of the sole of the foot are infrequent. They are more time consuming in comparison to the open flap cross-leg technic. For example, a multiple migration procedure was used to surface the sole of a foot injured by radiation. The procedure was so planned that the thicker skin of the back ultimately came to resurface the sole of the foot. The technic of migration is shown in figure 45 to illustrate its unique possibilities. Figure 46 shows the result obtained by this method.

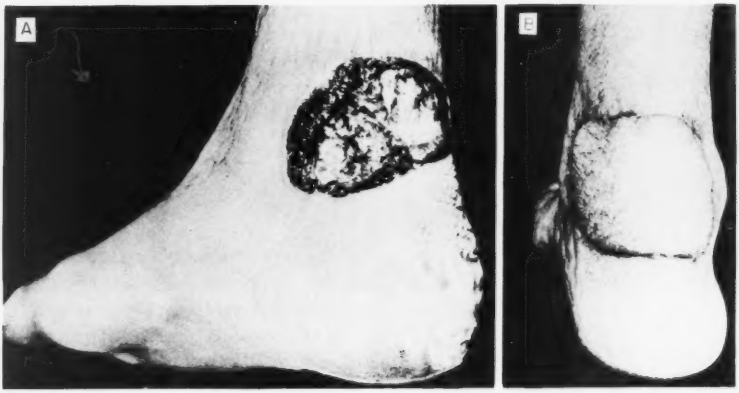

Figure 35. (A) *Preoperative lesion requiring flap coverage.* (B) *Final result.*

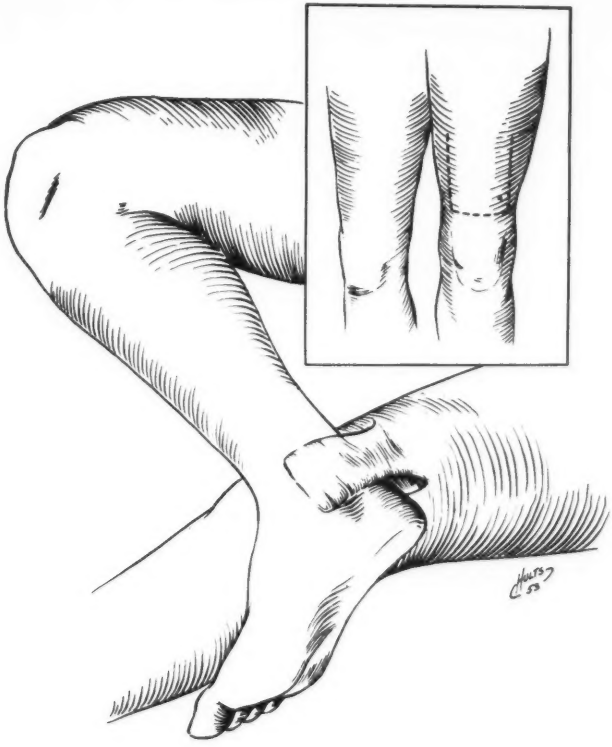

Figure 36. A suprapatellar flap used to repair ankle defect.

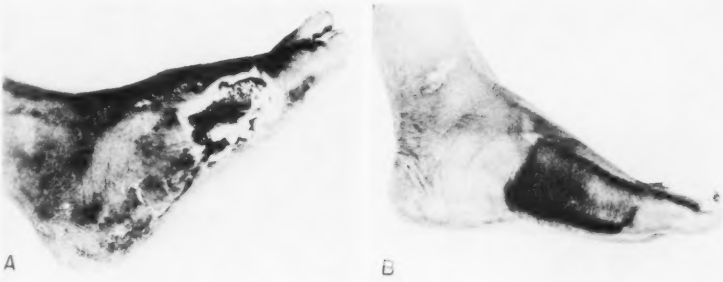

Figure 37. (A) *Preoperative appearance.* (B) *Final result.*

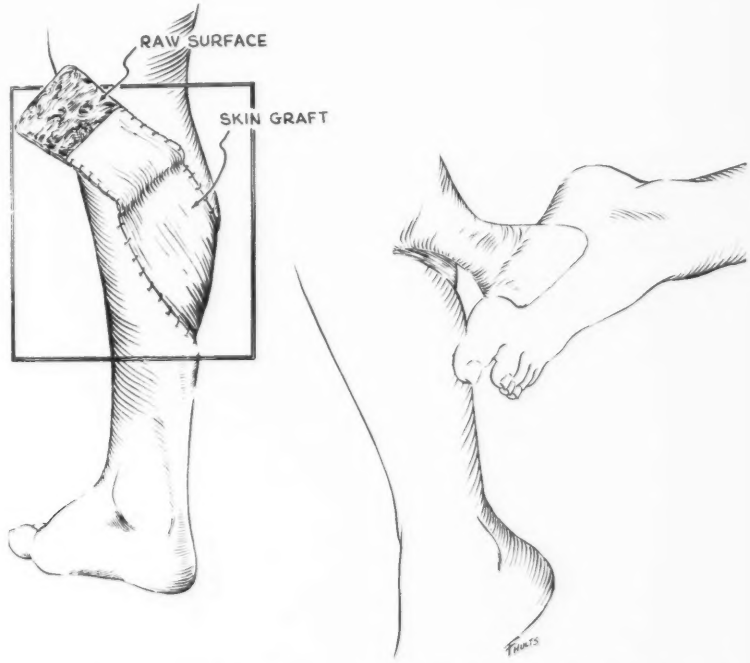

Figure 38. The raw surfaces of constructed calf flap were skin-graft dressed to produce a healed unit. The position of cross-leg attachment is also shown.

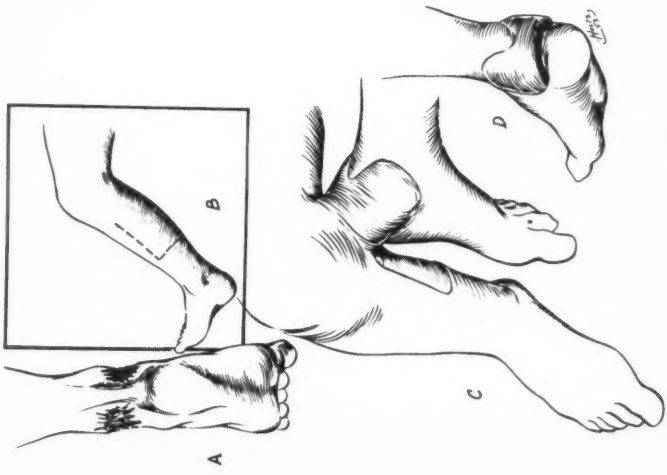

Figure 40. (A) *Location of initial defect.* (B) *Position of calf flap.* (C) *Split attachment.* (D) *Separation before inset of each segment.*

Figure 39. Use of split calf flap to surface bilateral ankle defect.

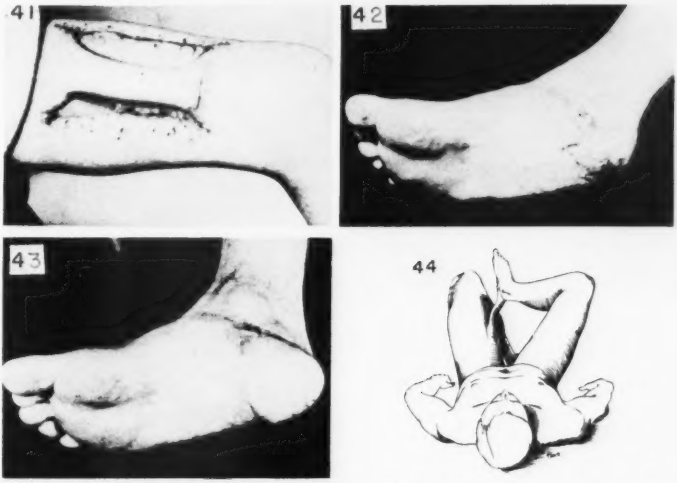

Figure 41. A constructed thigh skin tube with distal "delay" incision. A skin graft surfaces the donor site. Figure 42. Preoperative appearance of heel defect. Figure 43. Final appearance of heel. Figure 44. A sketch illustrating the method of fixing a tube transplant to a heel.

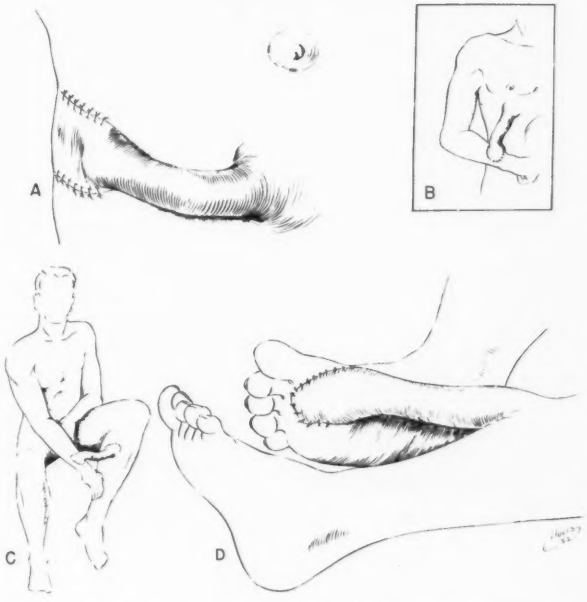

Figure 45. (A), (B), (C), *and* (D) *Tube construction and migration to sole of foot. This unusual procedure shows transfer possibilities.*

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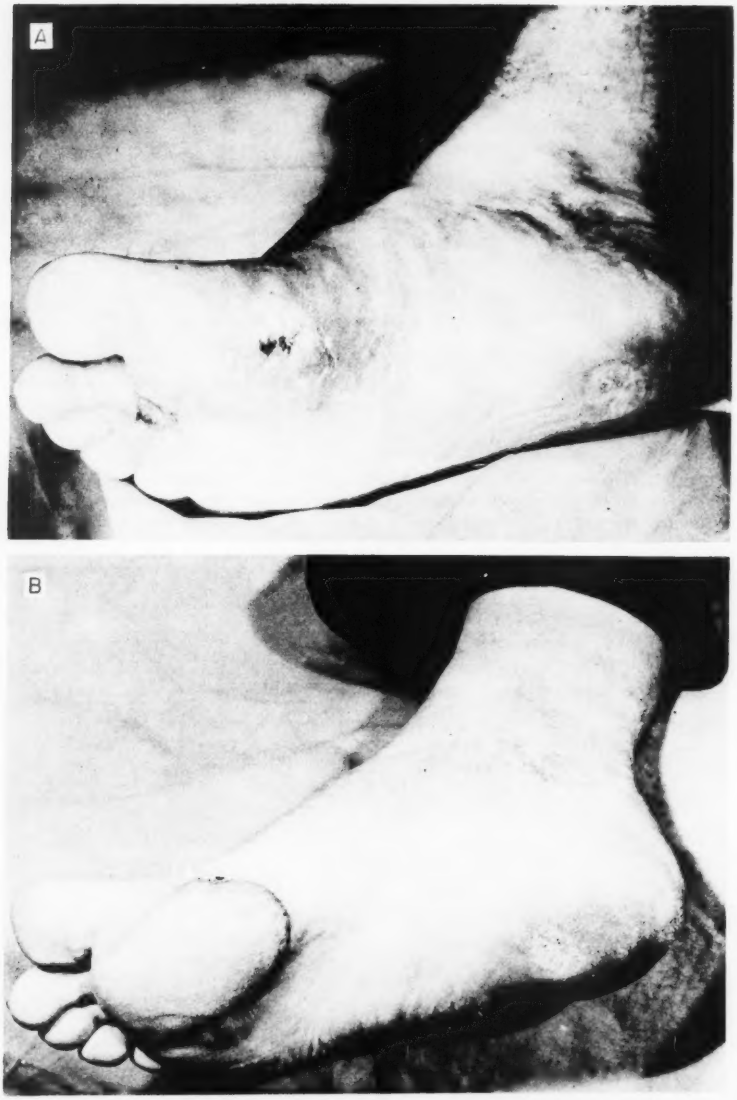

Figure 46. (A) *Radiation necrosis.* (B) *Coverage supplied from pedicle skin of back.*

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THE MODERN SURGEON

The self-sufficient surgeon is no more. The modern surgeon remains the head of the operating team, but his personality and characteristics are quite different from those of his predecessor. He has learned from experience what can be accomplished by concerted effort: in the operating theatre by the help of a highly skilled staff of workers, and in the world at large by organization. He need not abandon his authority, but he must exercise it with wisdom. He must be able, at one and the same time, to assume full responsibility for the operations he performs and to share the honors of success with his colleagues. He must combine the encyclopedic knowledge required of the modern surgeon with the objectivity of a research scientist; his sense of justice must be unimpeachable, and at the same time his attitude must be friendly, outgoing, and genial to all with whom he comes into contact. Patience, as always, is of the essence. He cannot always find the helpers he needs; he must work, then, generously and graciously, with those who are available.

—CARLOS GAMA, M. D.

in *Journal of International College of Surgeons*

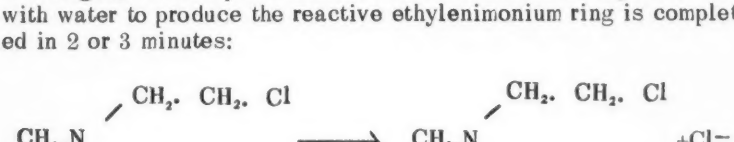
p. 602, May 1955

ACTH AND NITROGEN MUSTARD IN THE TREATMENT OF NEOPLASTIC DISEASE

EMANUEL ROLLINS, *Captain (MC) USN*
CHRISTOPHER C. SHAW, *Captain (MC) USN*

FOR the past several years the role of nitrogen mustard in the therapy of neoplastic disease has undergone extensive investigation. Reports from many sources have established fairly well the status of this chemotherapeutic agent. The adrenocorticotropic hormone of the pituitary gland (ACTH) has been similarly studied. The present report reviews the results obtained from the combined use of nitrogen mustard and ACTH therapy in a wide range of neoplastic diseases.

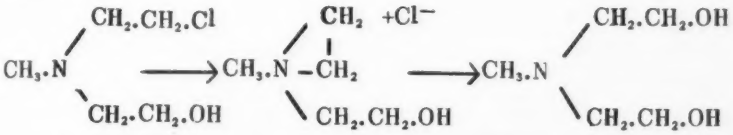
The use of nitrogen mustard in the treatment of neoplastic disease came as a sequel to investigations of the biologic actions of mustard gas after World War I and again during World War II. It was observed that mustard gas slowed the rate of cell division, impaired the formation of blood cells in man, and inhibited the formation of tar-induced tumors in mice. Experiments with closely related chemical compounds, the nitrogen mustards, exhibited similar biologic action with less toxicity. The most effective of the nitrogen mustards proved to be the preparation used in clinical medicine today, namely, methyl bis beta-chloroethylamine hydrochloride (HN_2). This compound is a stable, highly soluble, white powder which, in aqueous solution, rapidly undergoes a chemical reaction known as intramolecular cyclization with the formation of a highly reactive cyclic onium cation, ethylenimonium.[1] It is the latter cation which reacts with the body cells and produces both toxic and therapeutic effects which have been so extensively investigated in the past decade. The reaction of nitrogen mustard with water to produce the reactive ethylenimonium ring is completed in 2 or 3 minutes:



methyl bis beta-chloroethylamine — quaternary ethylenimonium chloride

From the Medical Service, U. S. Naval Hospital, Oakland, Calif. Capt. Rollins is now assigned to U. S. Naval Hospital, Bremerton, Wash.

With the completion of the second stage, which is slower, the cytotoxic effect is lost; a mono- and finally a di-hydroxy compound then is formed:



An appreciation of the above reaction explains the need for the immediate administration of the nitrogen mustard solution.

It is known that the ethylenimonium compound reacts with and alters many functional groups of compounds of biologic importance such as α-amino, sulfhydryl, hexose phosphates, and many others. The outstanding reaction is that which causes the death of cells. When therapeutic doses of nitrogen mustard are administered, cellular susceptibility is related to proliferative activity. Mitotic activity of many types of cells from several species of experimental animals is inhibited by minimally effective doses of nitrogen mustard. Mitotic inhibition is confined to the resting phase of the mitotic cycle; cells in active mitosis, when exposed to nitrogen mustard, complete their division. Nitrogen mustard then prevents further mitosis and eventually the inhibited tissue becomes depleted of mitotic figures.[1] Other evidence of direct toxic action on nuclear mechanisms is seen when the tissue is exposed to high doses of the drug. Nuclear fragmentation and abnormal chromatin dispersal are considered as pathologic and incomplete mitosis. No other class of chemical agents has been shown to have such specific action on nuclear activity.

Similar effects can be produced by x-ray. Thus, tissue reaction to systemic administration of nitrogen mustard is similar to that produced by total body exposure to x-ray. There is a vulnerability of the blood-forming organs and of the intestinal tract. Lymphopenia, granulocytopenia, thrombocytopenia, and moderate anemia occur, the severity of the response depending on the amount of drug administered. Lymphoid tissue throughout the body is uniformly depressed.

It was the above-observed effects which suggested the therapeutic use of nitrogen mustard in the treatment of patients with malignant lymphomas. Gilman and Philips[1] referred to unpublished data originally reported in 1943, by Gilman, Goodman, Philips, and Dougherty in a confidential military communication, concerning the clinical application of a nitrogen mustard compound in the treatment of neoplastic disease. The use of the drug was started in several clinics at once. With the end of World War II, the agent was distributed widely for clinical evaluation. Since then a great number of excellent reports have appeared.[2-8]

ACTH stimulates the cortex of the adrenals to produce a great many different steroid compounds. The effects produced on the body are widespread and profound;[9] the physiologic and toxicologic actions of the corticosteroids are induced mainly by the increase in compound F (hydrocortisone) in the circulating blood.

EFFECTS ON HEMATOPOIETIC SYSTEM

Numerous observations have established the marked effects of ACTH on the hematopoietic system. Short periods of administration of ACTH or cortisone produce a transient decrease in circulating lymphocytes. Prolonged treatment with ACTH results in a gradual return to normal lymphocyte level. Eosinophils fall in the peripheral blood but increase in the bone marrow. Reticulocytosis and erythrocytosis occur in those conditions which improve clinically under ACTH or cortisone therapy. In idiopathic thrombocytopenia associated with normal bone marrow, cortisone may cause the number of platelets to return to normal. The thymus, lymph glands, and abnormal cells of lymphosarcoma and chronic lymphatic leukemia are temporarily sensitive to ACTH or cortisone.

Reports to date indicate that cortisone or ACTH can produce transient regression of lymphomatous tumors including Hodgkin's disease, leukemia, lymphosarcoma, and occasionally plasma cell myeloma. Except in isolated cases, the neoplastic disease recurs rapidly when treatment is discontinued. Remission under continued therapy may last for several months. In other neoplastic diseases there is no advantage except for an unpredictable and temporary improvement in the general condition and psyche. Steroid therapy produces such widespread and profound metabolic changes in the entire body that the effect on neoplastic tissue is not considered specific or unidirectional.

MENTAL REACTIONS

ACTH or cortisone can produce a great variety of mental reactions. Some are beneficial and are associated with improvement in the general condition; others may result from the direct euphorigenic action of the adrenocorticosteroids. Mood changes, for better or worse, are usually dependent on the basic personality of the patient.

METHODS

The very nature of cancer precludes the use and observation of a single therapeutic entity for the purpose of comparison with another single type of treatment; therefore, in the group of patients reported here, management was not confined to the combined ACTH-nitrogen mustard medication, but included roentgen therapy, surgical treatment, hormones, and supportive measures when indicated.

Specific medication was administered in the following manner: 25 mg. of ACTH were added to a liter of 5 percent dextrose in distilled water, and this was administered slowly over an 8-hour period for 6 consecutive days. Nitrogen mustard was given on the second through the fifth day; the daily dose was 0.1 mg. per kilogram of body weight. The nitrogen mustard medication was prepared immediately before administration. Ten cubic centimeters of sterile distilled water were added to the 10-mg. ampule of nitrogen mustard. The previously calculated dose was withdrawn into a syringe and injected into the rubber tubing of the freely flowing intravenous ACTH infusion. Five minutes after the injection, the rate of flow of the ACTH infusion was reduced. It was found that nausea and vomiting could usually be avoided by thoroughly sedating the patient in the early evening and giving the nitrogen mustard shortly before bedtime. A few patients received the ACTH intramuscularly, 25 mg. every 6 hours for 6 days. In such cases the nitrogen mustard was injected into the tubing of a freely flowing intravenous infusion of 5 percent dextrose in distilled water in order to prevent venous thrombosis or phlebitis. The glucose solution was discontinued in most cases shortly after the medication was administered.

RESULTS

Table 1 lists all of the cases of neoplastic disease in 46 patients treated with combined ACTH and nitrogen mustard* during 1952 and 1953 at this hospital. One third of the patients had been followed during the preceding several years; the remainder were seen for the first time during the course of the 2-year period, 1952-1953. The diagnosis of every case listed was confirmed by microscopic tissue study, and was further confirmed by the Armed Forces Institute of Pathology. Autopsy study was accomplished in 28 of the 37 patients who died while undergoing study and treatment.

Our patients received from one to eight courses of combined ACTH-nitrogen mustard medication. Responses to therapy were classed as good, slight, or none. Results listed as good comprised the patients who obtained relief of pain for more than 2 weeks. These patients were able to return to work or were able to engage in greatly increased physical activity for a short period. Patients who derived slight benefit from therapy consisted of those who noted any improvement whatsoever, but less than 2 weeks in duration. The physical activity of these patients was not improved. The results listed as none consisted of the patients in whom no subjective or objective improvement was observed.

*Combined therapy suggested by Dr. W. D. McCarthy, Civilian Consultant in Oncology, U. S. Naval Hospital, Oakland, Calif.

TABLE 1. *Results in 46 patients with neoplastic disease treated with ACTH-nitrogen mustard*

Disease	Number of cases	Therapeutic response			Survival after treatment (months)	Living: June 1955 Number of cases
		Good	Slight	None		
Hodgkin's disease	10	9		1	6, 32, 52	7
Reticulum cell sarcoma	1			1	0	0
Lymphosarcoma, lymphocytic	1	1			12	0
Giant follicular lymphoma	1	1			3	0
Osteogenic sarcoma	1	1			2	0
Carcinoma of larynx	2	1		1	0, 8	0
Bronchogenic carcinoma	7	3	1	3	1, 2, 4, 5, 7, 11, 67	0
Adenocarcinoma of breast	2	1		1	1	1
Leukemia, myelogenous	2			2	0,4	0
Carcinoma of pancreas	2			2	1, 12	0
Hemangiosarcoma of bone	1		1		2	0
Carcinoma of bladder	3			3	½, 2, 3	0
Malignant melanoma	1		1		2	0
Carcinoma of cervix	1			1	3	0
Embryonal carcinoma of testis	1			1	3	0
Seminoma of testis	1			1	2	0
Adenocarcinoma of prostate	1			1	2	0
Adenocarcinoma of stomach	2			2	6	1
Malignant teratoma of mediastinum	1			1	1	0
Adenocarcinoma of colon	5		1	4	1, 5, 7, 18, 26	0
Total	46	17	4	25		9

DISCUSSION

Hodgkin's Disease

In the 10 cases of Hodgkin's disease a critical evaluation of the effects of ACTH-nitrogen mustard therapy is not possible. The

number of cases is too few, and combination or interim x-ray radiation was used one or more times in 8 of the 10 patients with this disease. The end of remission is defined as recurrence of fever or enlargement of lymph nodes, spleen, or liver. In this group of patients with Hodgkin's disease, with duration of life from onset of disease varying from 16 to 53 months, the average remission after ACTH-nitrogen mustard therapy was a little over 7 months (ranging from 2 to 25 months). In the three patients who died under our care (6, 32, and 52 months after the first course of ACTH-nitrogen mustard therapy), the length of remission diminished as the disease progressed until a state of resistance developed. We were impressed with the recognized fact that each case of Hodgkin's disease seemed to progress according to a predestined course determined by the nature of the disease in the particular individual, and that combined ACTH-nitrogen mustard therapy, like x-ray radiation or nitrogen mustard alone, produced remissions for a limited time. Survival to date in the seven remaining cases (24 to 42 months since the onset of disease) may or may not be attributed to combined ACTH-nitrogen mustard therapy.

Other Tumors

A single instance of reticulum cell sarcoma with involvement of the stomach was seen. The course was characteristically rapid. Treatment with x-ray 2 months after onset of symptoms resulted in a remission of symptoms for 4 weeks. Thereafter, a course of ACTH-nitrogen mustard therapy was completely ineffectual; the patient died at the conclusion of the treatment.

A 34-year-old patient with lymphosarcoma appeared at the hospital one month after the onset of superior vena cava obstruction. The chest roentgenogram revealed mediastinal involvement. Relief of signs and symptoms following x-ray radiation and ACTH-nitrogen mustard therapy was remarkable, and lasted 5 months. A second course of x-ray radiation produced a short remission, and a second course of ACTH-nitrogen mustard thereafter produced a 2-month remission. Further treatment with ACTH and nitrogen mustard did not impede the growth of neoplastic tissue. The patient died 13 months after the first symptoms attributable to his disease.

Although giant follicular lymphoma is recognized as the least aggressive form of the lymphomata, the course of this disease as observed in the single case listed in table 1 illustrates the known fact that it can never be safely regarded as benign. Jackson and Parker[10] considered the condition potentially malignant; it is very often the prelude to some fatal form of lymphoma. Although lymph nodes and the spleen are primarily involved in the pure form of the disease, other internal organs may be implicated. Russell[11] recently described a case of giant follicular lymphoma with involvement of the stomach, cecum, and sigmoid colon in which there was

enormous submucosal infiltration with lymphocytes. Our patient entered the hospital with very large superficial lymph nodes, splenomegaly, hepatomegaly, and large intra-abdominal masses (retroperitoneal lymph nodes) for which he was treated very vigorously. From February to May maximum x-ray radiation was administered to the abdomen. ACTH in doses of 25 mg. was given daily intravenously for 3 weeks, and a course of nitrogen mustard was also administered. The abdominal masses decreased markedly in size early in the course of treatment. He then suffered an unrecognized bowel perforation, developed a fibrinopurulent peritonitis, and died 2 months later. Postmortem examination revealed extensive lymphomatous invasion of the jejunum with perforation in the most proximal segment.

A patient with osteogenic sarcoma responded well to ACTH-nitrogen mustard therapy for 2 weeks, as evidenced by a marked decrease in pain and decrease in size of a metastatic lesion. The course of the disease was otherwise not influenced.

One case of squamous cell carcinoma of the larynx grade three, was seen 1 month following onset of symptoms. Laryngectomy and radical neck dissection were performed at once and a course of x-ray therapy was instituted in the same month. Two months later ACTH-nitrogen mustard therapy was administered without benefit; he died 2 weeks later. However, a similar type of squamous cell carcinoma of the larynx in another patient responded well to x-ray and ACTH-nitrogen mustard therapy with a great reduction in the size of the tumor mass. He died 8 months after therapy.

Of the seven cases of bronchogenic carcinoma studied, all received simultaneous x-ray and ACTH-nitrogen mustard therapy. Three experienced benefit in the form of remission of symptoms, and, in one case, regression of x-ray findings for several months. One of these cases illustrates the fact that each case tends to follow a benign or malignant course in spite of cellular diagnosis, and in spite of therapy. This 54-year-old man was known to be suffering from bronchogenic carcinoma for 30 months before he finally submitted to thoracotomy, at which time a nonresectable squamous cell carcinoma was found. After a course of x-ray therapy, he received no treatment for 16 months. He then was given a course of ACTH-nitrogen mustard without change in symptoms; he survived an additional 20 months. On the other hand, a 64-year-old man with squamous cell bronchogenic carcinoma experienced a 2-week period of improvement in sense of well-being after a course of ACTH-nitrogen mustard, and died 4 months later, duration of life from onset of symptoms being 9 months. Three patients with bronchogenic carcinoma derived no benefit from therapy.

A 63-year-old woman with adenocarcinoma of the breast was seen 13 years after a radical mastectomy and course of x-ray ther-

apy. A course of ACTH-nitrogen mustard therapy afforded no relief from the metastatic disease; she died 1 month after treatment. Another case of adenocarcinoma of the breast in a 53-year-old woman, who had been treated by mastectomy and x-ray 4 years before she was seen at our hospital, was given two courses of ACTH-nitrogen mustard plus a course of x-ray therapy for a metastatic lesion in a thoracic vertebra. Although there were no complaints and no significant physical findings before therapy, the psyche was improved, and remained so under continued cortisone therapy.

ACTH-nitrogen mustard therapy was ineffective in the remainder of the cases listed in table 1, including myelogenous leukemia; carcinoma of the pancreas; hemangiosarcoma of bone; leiomyosarcoma and carcinoma of the bladder; malignant melanoma; carcinoma of the cervix, testis, and prostate; and adenocarcinoma of the stomach and colon.

Careful observation in many of these cases revealed that the use of ACTH did not prevent or alter the effects of nitrogen mustard on the hematopoietic system. Leukopenia and lymphopenia developed in all instances, were transient, and did not present a problem in case management. Transient thrombocytopenia occurred in all cases, but was not complicated by purpura or bleeding. Nausea and vomiting were not troublesome, and could be prevented usually by adequately sedating the patient before administration of the nitrogen mustard.

SUMMARY AND CONCLUSIONS

The rationale of therapy with ACTH and nitrogen mustard has been reviewed. The physiologic effects on specific metabolic functions are almost identical whether ACTH, cortisone, or hydrocortisone are administered.[12] Therefore, it is recommended that ACTH be given in divided intramuscular injections or that cortisone be substituted. This eliminates the needlessly complex and patient-exhausting technic of 8-hour infusions of ACTH for 6 consecutive days.

The combined use of adrenocorticosteroids and nitrogen mustard may be more effective than the use of either one of these agents alone and at widely separated intervals. Good clinical but not curative results may be expected in Hodgkin's disease, and less spectacular results were noted in other lymphomata. Combination of the above therapeutic regimen with x-ray radiation in indicated cases may produce better results and longer remissions.

In patients with neoplastic diseases other than lymphomata and bronchogenic carcinoma, no truly significant benefits were observed, and for cancer in general, the treatment as outlined would

perhaps better deserve the term psychotherapy rather than chemotherapy.

A recently published report of palliation and remission of cancer with combined corticosteroid and nitrogen mustard therapy referred to comparable results at this hospital.[13] It is with regret that we are unable to confirm that encouraging report.

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That eminent American philosopher, Will Rogers, lost in an earlier flood of commission reports, once wisely remarked: "Collecting statistics is like collecting garbage; after you have it, you have to do something with it!"

—EDITORIAL
in *American Journal of Public Health and the Nation's Health,* p. 928, July 1955

THE CURRENT STATUS OF VECTORCARDIOGRAPHY

J. A. ABILDSKOV, *Captain, MC, USAR*

THE IMPORTANCE of the electrocardiogram in clinical medicine is securely established. Extensive experimental and clinical experience has defined both the areas of usefulness and the limitations of these records in the identification of cardiac lesions. It now appears that further progress in the recognition of such lesions necessitates either more knowledge of the basic processes giving rise to bioelectric phenomena, or technical improvements in the registration of these phenomena. The vectorcardiogram (VCG) represents one attempt to improve the registration of electrical events associated with the heart beat.

At this time vectorcardiography is in an experimental stage; however, there is a sound theoretical basis for the expectation that these records may both simplify and improve recognition of cardiac lesions, and an increasing amount of actual clinical observation supports this expectation. In view of the potential importance of these records to cardiac diagnosis, research programs designed to evaluate and improve the records are proceeding in both civilian and military institutions, and it seems desirable that physicians concerned with the diagnosis of heart disease have at least a general knowledge of these studies and their progress. This presentation does not represent a complete review of the already extensive literature on vectorcardiography but is intended to present briefly and simply some of the fundamental concepts which form the basis of vectorcardiography and to review the results of certain clinical studies which illustrate the potential usefulness of the VCG.

THEORETICAL CONSIDERATIONS

Relation of the ECG and VCG. To a limited extent the methods of vector analysis have been applied in the interpretation of electrocardiograms for many years. The routine estimation of the mean electrical axis of the QRS complex, which is a measurement having important clinical connotations, and the concept of the ventricular gradient, which represents an important part of modern electrocardiographic theory, are examples of vector analysis

From William Beaumont Army Hospital, El Paso, Tex.

applied to the electrocardiogram. The application of vector analysis to the electrocardiogram is most simply illustrated by the instantaneous electrical axis. Figure 1A shows diagrammatic

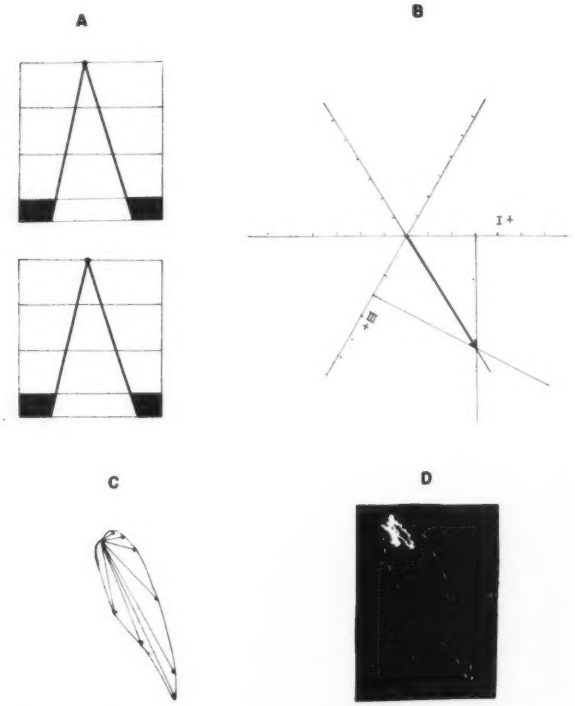

Figure 1. The relation of the ECG and VCG is illustrated. A shows diagrammatic QRS complexes from standard leads I and III. Simultaneous points at the peaks of the complexes, each having a magnitude of three units, are indicated by dots. In B these quantities have been used to plot a single vector quantity. C shows several vector quantities such as may be plotted from ECG leads, with their termini joined in order by a continuous line forming a projection of the VCG. In D the frontal plane projection of a VCG recorded from a cathode ray oscilloscope with the equilateral tetrahedron method of electrode placement is shown.

QRS complexes in standard limb leads I and III. A pair of simultaneous points on the complexes are indicated by dots and the quantity represented by the dot in each lead has a magnitude of three units and a positive sign. These quantities having the properties of sign and magnitude are scalar quantities. The same

information presented by these quantities may be incorporated in a single vector quantity which has the property of specific direction in addition to those of sign and magnitude. Such a quantity is shown in figure 1B. The triaxial reference system shown represents the lead axes of the standard electrocardiographic leads and have been divided into arbitrary units of magnitude. Perpendiculars from the magnitude division representing three positive units on the lead I and III axes have been drawn and their intersection defines the terminus of a vector whose origin is at the zero point of the triaxial reference system. This vector is an instantaneous electrical axis and presents the same information as did the two scalar quantities from which it was derived. If several instantaneous electrical axes are derived from pairs of simultaneous points, the termini of these vectors may be joined in order by a continuous line as shown in figure 1C. The resulting tracing presents the same information as did the original quantities from which it was derived, and if one began with this tracing alone the standard and unipolar limb leads of the ECG could be derived. With modern cathode ray oscilloscopes and electronic amplifiers such vectorcardiographic tracings may be recorded directly. Unlike the galvanometers employed to record ECGs, the beam of a cathode ray tube can be deflected both horizontally and vertically so that vector quantities representing the resultant of two scalars may be registered directly. The frontal plane projection of a VCG recorded from a cathode ray oscilloscope is shown in figure 1D.

Because one record can be manually derived from the other it is appropriate to ask why more information is expected from the VCG than can be obtained from the ECG. There are at least three reasons this expectation is valid. (1) In the vectorcardiogram recorded with the cathode ray oscilloscope the potential differences giving rise to horizontal and vertical deflections are combined in perfect time phase. Even though the general form of the VCG can be derived from simultaneously recorded ECG leads, the detailed configuration of the VCG depends on the points from which the vectors are plotted occurring within a few milliseconds of each other.[1] Because time intervals in that range cannot be recognized in the conventional ECG, the VCG is presenting information which cannot be extracted from the ECG. (2) Another reason the VCG may provide information in excess of that given by the ECG is the different form in which the same data is presented. This may possibly serve the purpose of making certain aspects of the data more easily apparent. (3) Still another reason for the expectation that VCGs may be more useful than ECGs, concerns the three-dimensional nature of electrical processes in the heart. Conventional electrocardiography has been limited to the frontal plane of the body as re-

flected in the standard and unipolar limb leads and to "sampling" specific areas of myocardium with the precordial leads, but has not attempted to view the electrical processes in the heart as a single spatial event. Although there is no reason why studies of "spatial electrocardiography" should not be done and would not provide useful information, the VCG, by combining the information from several scalar ECG leads, represents a simpler approach to such a study.

Methods of electrode placement. To study the electrical phenomena arising in the heart in three dimensions, it is necessary to place electrodes on the body in such a way as to define a spatial reference frame. A considerable amount of the research relative to the vectorcardiogram, that has been done to date, has concerned the advantages and disadvantages of a variety of methods of electrode placement. The reference systems which have been most widely employed are simple geometric figures such as the tetrahedron, cube, and parallelepiped. The use of any of these electrode arrangements necessitates several assumptions which are known to be in error. A comparative study of the reference frames named has shown that the equilateral tetrahedron produces a significantly less distorted indication of the electrical field of the heart than the other simple geometric reference systems.[2] Another approach to the problem of electrode placement is represented by the work of McFee and Johnson.[3-5] These workers have obtained the pattern of various "lead fields" using fluid mappers as hydraulic analogues of the body. With this information it is possible to select combinations of leads with fields in which undesirable features tend to cancel each other. This appears to be a potentially important concept to electrocardiography and vectorcardiography, and it may form the basis of the system of electrode placement which will be eventually adopted for future studies.

CLINICAL STUDIES

The variety of methods of electrode placement in use makes it difficult to assess over-all progress in the clinical study of the VCG. There are no areas in which the VCG has been unequivocally shown to provide clinically useful information in addition to that furnished by the ECG. There are, however, several studies which suggest that the VCG may eventually provide such information.

The normal VCG. Study of the VCGs of normal subjects has furnished an example of the manner in which these records may make certain data more accessible than it is in the conventional ECG. As is well known, the range of variation of normal ECGs is wide. Vectorcardiographic studies have shown that this variation is mainly the result of variation in spatial orientation of electric

forces from the heart and that much less variation in the contour of the VCGs themselves exists.[6-8] This finding not only simplifies the recognition of normal records but provides a basis for the study of abnormalities.

The VCG in intraventricular conduction defects. One of the areas in which the ECG gives less than the desired amount of information is in the precise identification of specific cardiac lesions occurring in association with disturbances of intraventricular conduction. The difficulty of recognizing myocardial infarction in the presence of left bundle branch block and the precise identification of right or left ventricular enlargement in the presence of bundle branch block are well known. It is also difficult to differentiate certain conduction disturbances of the right bundle from right ventricular enlargement. Although it cannot yet be considered established, there is suggestive evidence that the VCG may provide more precise data than the ECG regarding these difficult diagnoses. A different VCG pattern has been reported in patients in whom other studies established the presence of right ventricular enlargement, than that found in patients with ECG evidence of right bundle branch conduction disturbances without other evidence of right ventricular enlargement.[9] Left ventricular enlargement in the presence of right bundle branch block has been reported to be associated with VCGs whose initial portions are similar to those found in patients with left ventricular enlargement without conduction disturbances while right ventricular enlargement in association with right bundle branch block has been found to yield VCGs where the major area enclosed by the QRS-loop is located to the right of the isoelectric point.[10]

Subjects with left bundle branch block in whom clinical and laboratory data make the diagnosis of myocardial infarction highly likely have been found to have VCGs whose orientation and contour differ from those of other patients with this conduction disturbance and which are most easily explicable by postulating localized myocardial lesions.[11] In all of these studies adequate confirmation of the presence of specific pathologic lesions is still lacking, nevertheless the evidence that the VCG may find clinical applications in these areas is very suggestive.

The VCG in ventricular enlargement. One of the most characteristic VCG patterns yet described is that associated with left ventricular enlargement. It is well known that such enlargement may exist in the presence of a normal ECG and it is possible that in at least some instances, the VCG may suggest its presence when the ECG fails to do so. The possibilities that the VCG may assist in the differentiation of right ventricular enlargement and conduction disturbances of the right bundle branch

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and in the recognition of right and left ventricular enlargement in the presence of bundle branch block have already been mentioned.

The VCG in myocardial infarction. As has been mentioned, there is suggestive evidence that the VCG may assist in the recognition of infarction in the presence of left bundle branch block. There is also reason to believe that infarcts so located that only terminal portions of the ventricular depolarization process are altered may be recognized by the VCG. In the case of the ECG the marked variability of all but the initial portions of the normal QRS complex makes it impossible to recognize definitely those lesions so located that only the terminal QRS is affected. The similarity in contour of VCGs from normal subjects suggests that variation in the contour of portions in the VCG other than the initial one may be recognized in these records more easily than in ECGs.

SUMMARY

There is a sound theoretical basis for the expectation that the vectorcardiogram (VCG) may provide clinically useful information in addition to that furnished by the electrocardiogram. Clinical studies to date support this expectation and there is suggestive evidence that the VCG may be useful in the recognition of ventricular enlargement and infarction in certain instances in which the ECG does not reveal these lesions. There is also evidence that the VCGs of normal subjects are less variable than are normal ECGs, and this may serve to both simplify and improve the recognition of normal electrical processes in the heart.

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CHRONIC DYSENTERY DUE TO MIXED PARASITIC INFESTATION IN CHILDREN

Proctoscopic Findings

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BERNARD T. GARFINKEL, *M. D.*
ETERVINA FIGUEROA, *M. D.*

DIRECT visualization by means of the rectosigmoidoscope is an established aid in the recognition of parasitic infections of the colon. The appearance of the mucosa in specific dysenteries, such as amebic and bacillary, is well known.[1] However, no controlled observations of findings in mixed parasitic infestation in children are available. The purpose of this report is to call attention to the lack of specificity of mucosal findings in mixed infestation.

METHODS AND MATERIALS

This study comprises an analysis of 206 children consecutively admitted to the clinic of the San Juan City Hospital because of chronic bloody diarrhea. The group consisted of 129 boys and 77 girls with a mean age of 3.5 years, almost half of these children having had symptoms for nearly a year.

After careful history taking and physical examination, proctoscopic examination was done without prior preparation of the patient. The aspirated fecal material or exudate was immediately examined microscopically and also was sent to this laboratory for isolation of shigella or salmonella bacteria or *Endamoeba histolytica*.

RESULTS

Despite lack of prior preparation, adequate visualization of the mucosa of the rectosigmoid was possible in 157 (77 percent) children. Parasitologic study of fecal material from the remaining 49 (23 percent) children, however, gave almost identical percentage results (table 1). No pathogens of the enteric group were isolated.

The boys were infected with more species than the girls: 1.15 protozoa and 1.04 helminths per boy and 0.90 protozoa and 0.83 helminth species per girl.

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TABLE 1. *Parasitologic findings in 206 children examined proctoscopically without prior preparation*

Parasites found	Times visualized			
	Adequately (in 157 patients)		Inadequately (in 49 patients)	
	Number	Percent	Number	Percent
Protozoa				
Endamoeba histolytica	39	24	13	26
Endamoeba coli	52	33	17	34
Iodamoeba bütschlii	5	3	0	-
Endolimax nana	12	8	6	12
Chilomastix mesnili	19	14	14	28
Trypanosoma hominis	44	28	19	38
Enteromonas hominis	9	6	12	24
Balantidium coli	6	3	1	2
Giardia lamblia	32	20	-	-
Helminths				
Trichuris trichiura	126	80	39	78
Ascaris lumbricoides	57	36	21	42
Schistosoma mansoni	1	-	0	-
Hookworm	14	9	3	6

The proctoscopic findings in children in whom visualization was adequate (table 2) failed to disclose any difference which could be attributed to *E. histolytica*. An equivalent number of patients with ulceration were found in all groups.

TABLE 2. *Findings in 157 children with chronic diarrhea in whom proctoscopic visualization was adequate*

Findings	Times observed (in 157 patients)		E. histolytica				Both E. histolytica and T. trichiura absent (in 18 patients)	
			Present (in 39 patients)*		Absent (in 118 patients)			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Hemorrhage	75	48	20	51	55	46	3	16
Mucus	28	18	6	15	22	18	3	16
Ulcers	8	3	3	8	5**	4	1	5
Friable mucosa	55	35	11	29	44	37	9	50
Adult T. trichiura	85	54	28	71	57	48	-	-

*All but one patient had T. trichiura

**One patient infected with B. coli

Table 3 presents stool findings which are often regarded as suggestive of the presence of *E. histolytica*. While there is a strong suggestion that white blood cells are less frequently seen and Charcot-Leyden crystals more frequently seen in stools of

those with *E. histolytica* infection, the differences are not statistically significant. The material obtained through the proctoscope was cultured on Nelson's medium and on the egg slant medium; *E. histolytica* was thus isolated in 34 of the 52 children with amebic dysentery. In addition, stool cultures on artificial media disclosed seven cases not recognized by means of routine examination.

TABLE 3. *Findings in stools of 208 children with chronic diarrhea and amebiasis*

Findings in stools	Times observed in children with chronic diarrhea			
	In 206 patients		In 52 patients with E. histolytica	
	Number	Percent	Number	Percent
Red blood cells	116	56.3	30	57.7
White blood cells	30	14.6	4	7.7
Charcot-Leyden crystals	59	28.7	20	38.4

CONCLUSION

From an analysis of proctoscopic findings in a group of 206 children with chronic bloody diarrhea due to mixed parasitic infection, it would appear that there is no distinguishing morphologic feature which can be correlated with a specific infectious agent. Ulceration of the colon was not confined to children infected with *E. histolytica*.

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". . . neurotics build castles in the air, psychotics live in them, and psychiatrists charge them both rent."

—R. W. GERARD, M. D.
in *American Journal of Psychiatry*
p. 81, Aug. 1955

OSTEORADIONECROSIS AND THE DENTIST

HERMAN KAPLAN, *Lieutenant, junior grade (DC) USNR*

THE DENTAL profession has been fully informed about its responsibilities in the detection of oral cancer. Information about the problem has been widely disseminated so that today the dentist and the dental student are well aware of the incidence of the disease and what they can do to help combat it. It is generally being recognized that the co-operation of different specialties of medicine, preferably as a group or board sitting down together and deciding on the problem at hand and its eventual treatment, will remove the responsibility from one individual whose knowledge and experience are necessarily limited. Today, the two definitive methods for treating cancer are radiation and surgery. Great strides in radiation therapy have been made in the field of cancer of the oral cavity. Watson and Scarborough[1] said, in 1938, "Neoplasms having their origin in the tissues about the head and neck are particularly well suited to irradiation measures." This statement should be modified somewhat because today surgery has stepped in to handle many cases which would not be cured by radiation therapy.

With the advent of extensive radiation procedures about the head and neck, there has been a concomitant increase in cases of osteoradionecrosis as a complication. In a review of 1,819 cases treated by the Head and Neck Service of Memorial Hospital, New York, N. Y., it was found that 235 patients (13 percent) developed osteoradionecrosis.[1]

The effect of radiation on bone development has been known for some time. In 1905, Tribondeau and Recamier[2] were able to show that radiation to the skull of a newborn cat inhibited the growth of bone in that area. Cluzet,[3] in 1909, irradiated fracture sites both before and after fracture was induced. Macroscopic and microscopic analyses showed slowing down and, in some instances, complete absence of callus formation. This indicated that something had occurred to inhibit the repair mechanism, essentially as related to the periosteum. Wilkins and Regen[4] demonstrated that irradiation caused a drop in phosphatase activity after fracture as well as in growing dog bone. In 1922,

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Regaud[5] of the Curie Institute showed that the maxillary bones were susceptible to necrosis and infection during treatment of intraoral cancer with radiation. Bone, he thought, was more vulnerable to radiation than skin. He believed that the calcium and phosphorus in bone set up secondary radiations of a more caustic nature causing damage to the vital parts of the osseous tissue. Regaud, it seems, was very close to the truth.

In 1924, Blum[6] reported a case of osteomyelitis of the maxilla and mandible which was caused by some radioactive substance used in the manufacture of luminous dials for watches. This was part of the now famous incident of radionecrosis developing in people who worked for a luminous dial watch company. The workers painted a preparation of 2.5 mg. of radium bromide per 100 ml. of solvent on watch dials and hands. The brushes were compressed between the lips and buccal mucosa so as to obtain a fine point. Thus these people were exposed to a considerable amount of radiation. However, the cases reviewed also showed such predisposing factors of pyorrhea, mouth infection, and dental caries.[7] Dalby and associates,[8] Strauss and McGoldrick,[9] and Baker[10] recorded cases of fracture of the femoral neck following irradiation for pelvic and gynecologic cancer. They strongly suspected that these fractures were due to diminution of vitality of the femur due to irradiation. It should be stated, however, that not all investigators agree that bone is so susceptible to radiation. Flaskamp,[11] in 1930, said: "The healthy bone of the adult appears to be very radio-resistant." He was backed up by Colwell and Russ[12]: "Adult bone is relatively resistant to x-ray and injuries from this cause are rare." These opinions were in the minority, however, and a preponderance of evidence soon began to mount, indicating that a tumor dose of radiation, *i. e.*, enough roentgens to kill a tumor, also affected bone of that area in a very deleterious manner.

In 1939, del Regato[13] dealt with the dental lesions complicating radiation therapy. He indicated that healthy teeth in an area of radiation easily become hypersensitive, abraded, carious, and sometimes completely crumbled. The mechanism has been obscure, although theories of destruction of the odontoblasts of dentine, atrophy of salivary glands, lowering of the pH of saliva, and extensive use of fruit candies to compensate for diminution of saliva have been advanced. The importance of this observation is the indication that infection is an added danger to a mandible or maxilla which has been irradiated and devitalized.

The exact mechanism of osteoradionecrosis is not known. Why some people are apparently more radiosensitive than others is also not known. However, the physiology of the mechanism seems to indicate that it is a vascular phenomenon. That bone does lose its vitality is indicated by a diminution in calcium and

phosphorus exchange. Commander H. C. Dudley (MSC) USN,[14] working with radioactive phosphorus, indicated that bone which has received a tumor dose (usually from 3,000 to 4,000 r) will not pick up any radioactive phosphorus. When a scintillometer was used over areas of irradiated bone, the "count" was very low as compared with normal bone, indicating that bone metabolism was abnormally poor. Normal bone, however, picked up a good deal of the tagged element. The physiology and microscopic anatomy of irradiated bone were well discussed and evaluated in an article by Ewing.[15]

In order to understand bony changes due to irradiation, it would be best to review superficially the structure of bone. Bone cells are derived from mesenchymal embryonal cells, which form osteoblasts and subsequently become enclosed in a space or lacuna that they have a part in forming by the deposition of bone. These cells are connected with one another vertically and horizontally by small canaliculi. Enclosed in peripheral bone are haversian systems, which contain blood and lymph vessels. In the interior of the bony system are the highly vascular marrow spaces. On the outside of a bone is a sheet of osteoblastic and fibrous tissue called the periosteum, which is also highly vascular. We see that bone is essentially "a rich vascular network enclosed in a rigid framework of bone tissue, the structure of which makes it highly vulnerable to the effect of irradiation."[1]

After irradiation there is an initial hyperemia of blood vessels followed by induration and relative anemia. There occur subsequently a swelling and mucinous degeneration of collagen fibrils which are an integral part of the walls of blood vessels. There is an occlusion and rupture of capillaries in the area. These phenomena led Ewing[15] to proclaim: "I have become convinced that irradiation acts very largely through vascular disturbance."

The periosteum becomes thickened and hyaline. The layer of osteoblasts on the inner surface usually is found to be absent. The bone marrow is deprived of cells and undergoes fatty degeneration. The marrow space is increased and no new bone appears. The bone itself shows marrow and irregular trabeculae with obliterative sclerosis of the nutrient vessels. The bone cells show degeneration and stain poorly with hematoxylin and eosin. The lamellar bone appears hyaline and very brittle, and canaliculi are closed.

The entire picture ties in well with the phases of osteoradionecrosis. With the blood supply occluded, factors that play a role in radioresistance are lost. The osteoblasts no longer function and no new bone forms. The bone becomes devitalized and may remain quiescent for years until trauma or infection is superimposed, and then the bone sequestrates quickly.

The question of osteoradionecrosis, then, is resolved down to devitalized bone caused by radiation which is then aggravated by a superimposition of infection or trauma. The development may be rapid or, as previously stated, the condition may be dormant for years and then spontaneously occur. Cases have been known to be dormant for 6 to 10 years before osteoradionecrosis develops. The long delay in sequestration and solution of devitalized bone can probably be explained on the basis of injury and sclerosis of blood and lymph vessels in the haversian systems, periosteum, and surrounding tissues. It seems evident that because calcium makes up 85 percent of bone, when bone is irradiated the calcium transforms the hard, penetrating, primary radiation to a more caustic and selective type of secondary radiation. The periosteum, therefore, and the inner layer of cells receive the primary radiation and the maximum effect of the caustic secondary rays. As Regaud[16] said: "The irradiated bone burns and burns the periosteum and mucosa enveloping it."

It should be noted that of all the bones of the body, none, except perhaps the neck of the femur, is as dense as the mandible. Therefore, the bones of the head most frequently altered by radiation are those of (1) the mandible, (2) the maxilla, and (3) the calvaria. The mandible, because of its shape, compact composition, and presence of one nutrient artery, is more susceptible than any other bone of the head.

Clinically osteoradionecrosis may range in severity from a small sequestrum, which will exfoliate, to an ulceration of soft tissues and exposure of bone associated with a continuous, dull, unrelieved pain. Trismus, swelling, draining sinuses, and, later, pathologic fracture, then death may occur. The bone infection may last as long as 8 years with drainage, yet recovery may occur. In the series of 125 deaths at Memorial Hospital, bone complications were a factor in the cause of death in 106 patients (85 percent), and 12 patients (9.6 percent) died as a direct result of osteoradionecrosis and free of cancer.[1]

What then shall be the course of action from a dental viewpoint in patients to be irradiated and patients who already have been irradiated? Shall we extract teeth before irradiation procedures or try to save them? Shall we extract teeth in people who have been irradiated, and if so, what will be the outcome?

There seems to be unanimous agreement that all infected carious and questionable teeth be extracted in the area to be irradiated. This statement can be found in articles by Stewart[17] and others.[13, 18–33]

Many authors believe that the ideal procedure is to render the mouth edentulous with the exception of limited lesions which

can be treated through small portals, especially where protection with lead shields is practicable.[34–39]

Some few authors like Paterson[40] believed that extractions only spread the cancer or infection, that time lost in extractions is detrimental, if not deadly, and that retaining the teeth so as not to delay treatment is preferable.

It would seem that with today's antibiotics and supportive treatments, the approach should be much more conservative. Wholesale extraction of teeth at the mention of the idea of radiation therapy is to be condemned. We must not lose sight of a patient as an individual. If the radiation can be confined and the lesion is small, a conservative approach is indicated. Too much cannot be said for oral hygiene before, during, and after treatment.

If extractions are decided on, it would be best to pay particular attention to, and to remove, sharp projections of interradicular alveolar bone. These conditions, while observed in good oral surgical technic, should be dealt with more severely here, because after radiation there will be no bone growth or bone remodeling. All thin plates of alveolar bone should be "rongeured" well, down close to the base. After suturing, good oral hygiene with frequent irrigations and supportive therapy to encourage healing should be instituted. Most authors agree that at least a week should elapse before radiation is begun. While not losing sight of the primary focus, the malignancy, all people involved should be made cognizant of the importance of the teeth to the patient. Young people, and some older ones, will not appreciate being edentulous if they believe that perhaps the teeth could have been spared, in at least certain sections so that partial dentures could be constructed.

In postirradiation cases, generally extractions should be postponed for several years. However, this too depends on the dosage of radiation the patient has received. At this hospital, with a routine of antibiotics and hospitalization, four impactions were removed without any immediate complications in a postirradiation case. Intra-oral scars should be treated gently, and strong chemicals and caustics should be avoided. Periodontal treatment of only the mildest type should be instituted, as deep curettage may easily send enough bacteria into devitalized bone, which is a good breeding place for infection. When teeth have become crumbled and demineralized, indicating heavy radiation, the technic of grinding the crowns to the gingiva and filling the root canals has been advocated.[1]

It should also be emphasized that in certain cases necrosis will occur without the presence of teeth or oral infection.[33]

Dead bone may harbor bacteria for years and is particularly suitable for the growth of streptococci and *Aerobacter aerogenes*.[15] This bone may be a focus for necrosis for a long time to come. However, where the bacteria come from if oral infection is not present, whether through the lymphatics or blood stream, is not known.

There are three methods of irradiating an area; the single massive dose, the fractionated dose, and the prolonged continuous dose. Information on the latter two is scanty. It would seem that there is less bone damage with the fractionated dose, and more studies are necessary. The method of irradiating a tumor through many different portals has reduced the radiation per se to certain sections of bone. New methods of shielding the mandible also have given some hope in this direction. It would seem at present, that with new methods and ideas in radiation therapy and the co-operation of both radiologist and dentist in pre- and post-irradiation cases, the morbidity and mortality from osteoradionecrosis will be markedly reduced in the future.

SUMMARY

A brief history and discussion of osteoradionecrosis has been given along with the known physiology and pathology of the condition. The management of cases seems to indicate that a conservative and individual approach should be given to each patient and set rules should not be standard for treatment. Careful management has resulted in many more successful results where there has been good co-operation between the radiologist and dentist in conditions involving the jaws and associated structures.

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PEPTIC ULCER IN MILITARY PERSONNEL

Incidence and Management

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SINCE the passage of the original Selective Service Act on 16 September 1940, the probability of military service has become a factor in the life of every American man. The diseases which affect an individual's eligibility for service or efficiency in service are a proper concern of military and civilian physicians alike. In recent years there has been a significant increase in noneffectiveness in Army personnel due to peptic ulcer. The average daily noneffectiveness per 1,000 average strength was 0.44 for the period from 1942 to 1945 and rose to 0.51 for the period from 1950 to 1953. Days lost per admission were 59 and 64 respectively. Peptic ulcer was the cause of 1 percent of the total noneffectiveness from disease from 1942 to 1945 and of 3 percent from 1950 to 1953. It would seem proper to examine data bearing on the occurrence of peptic ulcer in various military settings, to seek an interpretation of such variations as may be noted, and to consider measures for countering the loss of effectiveness due to this illness.

INCIDENCE

The number of new cases of peptic ulcer in the U. S. Army has varied with the type of military activity. The admission rate is low in peacetime, high in periods of intensive training and in wartime. Admissions of Army personnel to hospital or quarters status for peptic ulcer during the years 1937 to 1953 are given in table 1. The data were obtained by tabulation of individual medical records submitted at the time the patient was discharged from the hospital. An effort was made to recognize "new cases," and readmissions are not shown. The number of admissions per thousand mean strength per year vary from 1.50 in 1940 to 3.36 in 1943, then fall to 1.54 in 1946 and rise again to 3.07 in 1953. Grouping the data as in table 2 serves to emphasize the increase in the rate of admissions for peptic ulcer during periods of threatened or actual fighting.

Admission rates for the different theaters or areas are given in table 3. The rates for troops in the United States are higher

From Letterman Army Hospital, San Francisco, Calif. and Office of The Surgeon General, Department of the Army, Washington, D. C.

than for the theaters shown, with the exception of the Caribbean (1951) and Europe (1949 and 1951 to 1953). In general, the rate

TABLE 1. *Admissions* for peptic ulcer in the U. S. Army (total Army) by year, 1937-1953*

Year	Number			Number per 1,000 average strength per year		
	Total	Gastric ulcer**	Duodenal ulcer	Total	Gastric ulcer**	Duodenal ulcer
1937	296	55	241	1.68	.31	1.37
1938	323	72	251	1.76	.39	1.37
1939	383	69	314	2.00	.36	1.64
1940	507	108	399	1.50	.32	1.18
1941	4,004	603	3,401	2.98	.45	2.53
1942	10,935	1,503	9,432	3.37	.46	2.91
1943	23,051	2,310	20,741	3.36	.34	3.02
1944	20,651	1,451	19,200	2.65	.19	2.46
1945	15,285	910	14,375	2.02	.12	1.90
1946	3,345	225	3,120	1.54	.10	1.44
1947	1,666	189	1,477	1.60	.18	1.42
1948***	1,829	202	1,627	1.88	.21	1.67
1949	1,601	169	1,432	2.37	.25	2.12
1950	1,935	165	1,770	2.74	.23	2.51
1951	4,215	225	3,990	2.88	.15	2.73
1952	4,755	245	4,510	2.96	.15	2.81
1953	4,700	320	4,380	3.07	.21	2.86

**Source:*
1937 to 1941 Annual Reports of the Surgeon General, U. S. Army.
1942 to 1953 Preliminary sample tabulations of individual medical records, Medical Statistics Division, Office of the Surgeon General, Department of the Army, Washington, D. C.

**For the years 1937 to 1948 the data for gastric ulcer include admissions for gastrojejunal ulcer, and for the years 1949 to 1953 the data exclude admissions for gastrojejunal ulcer. During the period 1950 to 1953, when separate data for gastrojejunal ulcer were available, admissions due to gastrojejunal ulcer comprised 0.1 percent of the total group of ulcers.

***Includes U. S. Air Force personnel.

TABLE 2. *Admission rate for peptic ulcer* in U. S. Army*

	Period	Number per 1,000 average strength per year
Peacetime	1937-1940	1.70
Prewar	1941	2.98
World War II	1942-1945	2.74
Postwar	1946-1948	1.63
	1949	2.37
Korean conflict	1950-1952	2.88
	1953	3.07

See footnote, table 1.

TABLE 3. *Admissions to hospital and quarters for peptic ulcer* U. S. Army, by area and year, 1943 to 1953*

Number per 1,000 average strength per year

Year	Total Army	Continental U. S.	Europe	Pacific and Far East	Caribbean
1943	3.36	3.70	2.99	2.57	2.14
1944	2.65	3.88	1.35	1.37	1.96
1945	2.02	3.56	1.15	.85	1.72
1946	1.54	2.24	0.79	.57	1.25
1947	1.60	2.14	1.01	.95	1.60
1948**	1.81	2.17	1.71	1.17	.70
1949	2.37	2.54	2.65	1.98	1.87
1950	2.74	3.10	2.31	2.18	2.26
1951	2.88	3.31	3.65	1.65	4.84
1952	2.96	3.50	3.84	1.49	2.29
1953	3.07	2.60	6.36	2.11	2.28

See footnote, table 1.

**Army only; therefore the total rate does not agree with the total rate shown in table 1.

in inactive theaters is high, and falls when the theater becomes active. For example, the rate declined in Europe during 1943, 1944, and 1945, and in the Pacific and Far East during the same years. The rate also declined in the Pacific between 1950 and 1952. This is graphically illustrated in figure 1.

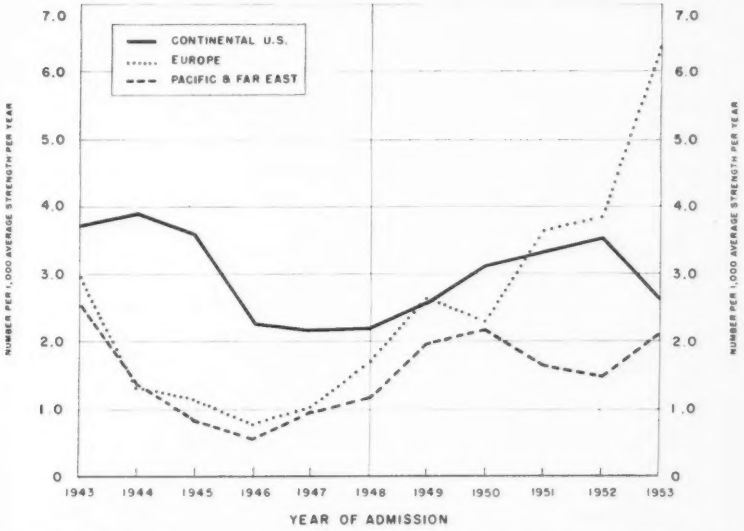

Figure 1. Graph illustrating the comparative decline and rise, from 1943 to 1953, in hospital admission rates for peptic ulcer among U. S. Army personnel in active and inactive theaters. Preliminary data based on sample tabulations of individual medical records.

The over-all admission rate for peptic ulcer in the Army has risen steadily from 1946 through 1953. This has been due primarily to large increases in the admission rate for this condition among personnel admitted to hospitals in Europe. In Europe during 1953, the year of the largest increase since that of 1948, the admission rate (6.36 per 1,000) increased 66 percent over that of the preceding year (3.84 per 1,000). The rate in Europe was 13 percent higher among enlisted men than it was among officers, a reversal of the usual distribution by rank of admissions for peptic ulcer. The admission rate among officers in Europe was 75 percent greater than the rate among officers in the continental United States, and the rate among enlisted men in Europe was more than twice the rate for enlisted men in the continental United States. The large increase in the peptic ulcer rate in Europe during 1953 was accounted for almost entirely by the increase in morbidity among enlisted personnel.

This increase was seen both for gastric and duodenal ulcer. It occurred primarily among Europe-stationed enlisted personnel in the 20- to 24-year age group, for whom the admission rate was more than twice as high as the corresponding rate for the continental United States. This situation is not explained by the relative numbers of cases existing prior to service, because only 1 percent of the new admissions for peptic ulcer in Europe during 1953 were so reported, while 31 percent of the new admissions were in this category in the continental United States. Limiting the comparison to cases originating while the patients were on active duty, the morbidity rate for enlisted men 20 to 24 years old in Europe during 1953 is observed to be 5 times the comparable rate for the continental United States. There was also a 14-percent increase in the psychiatric disease rate in Europe between 1952 and 1953, during which time the psychiatric disease rate for the rest of the Army decreased 13 percent; Europe exhibited the highest psychiatric admission rate of any major geographic area. The observed increase in the psychiatric disease admission rate in Europe in 1953 did not appear in association with a decrease in the rate of psychiatric outpatient treatments. On the contrary, there was a comparable increase in the rate of psychiatric outpatient treatments. The increase in the psychiatric disease admission rate was mainly a result of an increase in the rate of admissions for character and behavior disorders.

DISPOSITION

The number and rate of separations of personnel from the U. S. Army because of peptic ulcer are given in table 4. As was the case with admissions, the peacetime separation rate is much less than that which prevailed during World War II. No comparable rise occurred during the Korean conflict. Hospitalization was

required for 69,927 men during World War II, and 53,450 were separated from the service for disability due to peptic ulcer in this period. From 1949 through 1953 there were 17,206 hospital admissions with only 3,893 separations. This reflects a change in the attitude of physicians concerning the ability of the soldier with a peptic ulcer to perform military service. A more important

TABLE 4. *Separations* for disability due to peptic ulcer in the U. S. Army by year, 1937 to 1953*

Year	Number	Number per 1,000 average strength per year
1937	65	.37
1938	69	.38
1939	103	.54
1940	143	.43
1941	1,730	1.29
1942	5,039	1.55
1943	17,054	2.48
1944	16,444	2.11
1945	14,913	1.97
1946	2,921	1.35
1947	845	.81
1948**	538	.55
1949	367	.54
1950	318	.45
1951	1,053	.72
1952	1,320	.83
1953	835	.54

**Source:*

1937 to 1941–Annual reports of the Surgeon General, U. S. Army.

1942 to 1945–Individual reports of separation, Adjutant General's Office, U. S. Army.

1946 to 1953–Preliminary tabulations of individual medical records, Medical Statistics Division, Office of The Surgeon General, Department of the Army, Washington, D. C.

**Includes U. S. Air Force data.

factor has been the difference in the period of service required of the draftee; during World War II he was obliged to serve "for the duration," a date so indefinite as to seem unreal and to encourage him to seek release through medical channels. In more recent times, including the period of the Korean conflict, the period of service imposed under Selective Service was two years. It was then possible to look ahead to a definite release date, and for the soldier and his physician to plan on "tiding him over" until he was returned to civilian life by the completion of his period of obligated service. An additional factor is the larger proportion of volunteer soldiers in recent years, many of whom actively resist the suggestion that they are not physically fit to continue in service.

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DISCUSSION

From the data available, it seems that the incidence of peptic ulcer in the U. S. Army does not exceed that in the civilian population. There is an increased incidence in both groups during periods of threatened or actual warfare, followed by lower rates when this activity is terminated. The social pressures which tend to disrupt satisfactory adjustment in the wartime civilian community are familiar to all; the military training camp presents certain additional stresses: disruption of family life, pursuit of unfamiliar military activities under new and frequently changing supervisors, and often the lack of a clear and cogent personal conviction of the necessity for these activities. Instability of assignment, associates, and environment, and the uncertainty of the future are important aspects. Many of these features are present in overseas theaters, but when the theater becomes "active" the soldier's presence and activity have an obvious purpose; the social ties with his comrades become very strong and he identifies closely with his unit. The admission rate for ulcer falls. If only combat troops were involved in the rate reduction, one might be tempted to explain it by assuming that many soldiers would ignore their symptoms, and many medical officers would be unwilling to excuse men from front-line duty except in extreme circumstances. These factors are probably important, but it must be remembered that the reduction in rate applies to service as well as to combat troops, and that the former greatly outnumber the latter.

It is generally accepted that emotional factors are related to ulcer genesis and recurrence. Certain factors in personality as well as certain environmental situations seem to precipitate ulcer recurrence in susceptible persons. No true "ulcer type" of personality has been recognized, because ulcer occurs in the presence of many different personality patterns. Physicians[1-3] reporting experiences with World War II soldiers with ulcer distinguished two groups of patients: (a) The regular Army volunteer soldier with considerable service and good motivation who had "characteristic symptoms," responded quickly to medical treatment, and could be returned to duty; and (b) the nonvolunteer with poor motivation who had "atypical symptoms," remained symptomatic until his release from service was assured, and entered the hospital repeatedly if an attempt was made to return him to duty. In 1953 Barrett[4] at Brooke Army Hospital studied 40 duodenal ulcer patients for adequacy of social adjustment in their family, school, job, marital, and military relationships. She classified her patients into two groups: (a) Those with unsatisfactory social adjustment prior to the development of ulcer. This group included most of the patients with less than 2 years of service. In one fourth of these patients stressful situations were identi-

fied which might have played a role in the precipitation of ulcer. (b) Those with previously satisfactory social adjustment were predominantly volunteers with more than 2 years' service. Areas of emotional conflict which might have been important in ulcer genesis were recognized in 86 percent of this group; in 73 percent, these were of a nonmilitary nature. Combat was not a factor in the initiation of ulcer or in its recurrence. Other stresses peculiar to the military played only a small role in contrast to the hazards of personal life, including marital and family difficulties. Motivation for military service was measured by the patient's expression of his attitude toward his current duty assignment, toward entering the service, and by his feelings of frustration or discrimination. It was poor in 90 percent of those with less than 2 years of service and in 60 percent of the others. Those personality traits said to characterize the patient with ulcer—striving for success, fear of failure, assumption of responsibility—were found in only half of her patients who had made a satisfactory social adjustment, and not at all in the poorly adjusted group.

Although the two groups of patients described by Berk and Frediani[1] and by Friedman[2] correspond well with the grouping proposed by Barrett and confirmed by current clinical experience, it is probable that the difference between the groups is quantitative rather than qualitative. The patients of each group have failed in their adjustment, and the inability of the physician to identify the area of emotional conflict is indicative only of its profundity.

The unusually high admission rate for ulcer in Europe during 1953 would seem to be explicable in the light of the foregoing. Kehoe[5] listed the following environmental factors as contributing to ulcer occurrence, particularly in troops stationed in France: (a) difficulty in adjusting to primitive living conditions after being accustomed to modern comfortable facilities, (b) difficulty in obtaining milk and ambulant ulcer diet when assigned to field units, (c) monotony of life in rural French villages, (d) difficulty in finding suitable family quarters and of living on the French economy. He further states: "The stimulation of combat and the ability to perceive firsthand the necessity for being in uniform may cause some patients with ulcer to sublimate symptoms which during monotonous periods of routine training flare up. One wonders if the same factors may not be operating here in Europe which thus far is a noncombatant area where the primary activity of the troops is training."[5] In addition to the factors Kehoe has advanced, one must consider that American troops were no longer popular with either the French or the German civilian population. The Army was steadily losing its attractiveness as a career, "fringe benefits" were being curtailed, and re-enlistments were at a very low rate. The Europe-stationed soldier was engaged in a rigorous

training program. He was rejected by the local population, his personal life disrupted by economic and other difficulties, and he was living in a tense international political situation that he was powerless to influence.

RECOMMENDATIONS FOR MANAGEMENT

A certain "therapeutic attitude" is required of the physician if patients with peptic ulcer are to be used as soldiers. The physician must believe that these men can perform effectively despite recurrent attacks of illness, and he must define for the patient the role of illness in a manner which does not create a chronic invalid and which minimizes the secondary gain from the illness. To accomplish this an excellent doctor-patient relationship will be needed.

Palmer and associates[6] have shown that many soldiers have long and useful military careers despite the handicap of recurrent peptic ulcer. Wise and colleagues[7] evolved a plan of outpatient management which reduced the noneffective rate due to peptic ulcer to 0.10 per thousand average strength at their post. They emphasized again the point made by Barrett that personal problems rather than the stress of military service are the important precipitating cause of ulcer recurrence in most soldiers.

If we select a favorable group of patients to continue in the military service, what should we do to minimize the time lost through ulcer recurrence? The use of dietary programs and drug therapy during periods of remission of symptoms has failed to prevent ulcer recurrence in civilian life, and is often impracticable in military life. Limitation of assignment with a view to preventing military stress does not seem important, but may serve to avoid some of the problems of personal life which arise from the disruption of the family. It is not easy to give an answer here, for often ulcer recurrence seems to be precipitated by a visit home, or the return to family from overseas duty. Perhaps the most important thing accomplished by assignment restriction is to keep the patient under the care of the same physician, who can give him support as needed as well as early treatment of recurrent symptoms, thereby possibly avoiding hospitalization. In any case, there does not now exist a provision for limited duty as such, and past experience has not demonstrated this to be an effective method of preventing recurrence. These restrictions are not only unnecessary but undesirable. If one elects to return patients with ulcer to duty, it must be recognized that the man probably has roentgenographic evidence of deformity which he can use to avoid unpleasant assignments, and that he will have recurrences of his ulcer which may require hospitalization from time to time.

The important points in the management of a soldier with peptic ulcer would seem to be:

1. To establish the diagnosis by roentgenographic examination, using repeated studies as needed to confirm the diagnosis and to establish the fact that the ulcer has healed.

2. To treat the patient by conventional measures of diet, antacids, and antispasmotic antisecretory drugs until he is symptom free, and healing is complete as shown by roentgenographic examination.

3. To develop a strong doctor-patient relationship by the "therapeutic interview," and to obtain sufficient knowledge of the patient so that his problems and the areas of situational stress responsible for recurrence of his ulcer can be understood. If the physician does not have the time or inclination for this phase of treatment, a medical social worker may be used as an assistant to obtain the information, but all interpretations should be given to the patient by the physician. Any patients with personality defects which warrant administrative or psychiatric separation from the service should be discharged as soon as possible.

4. To relieve, at least temporarily, through superficial "ventilation" psychotherapy, the resentment these patients harbor. This is probably as important as healing of the ulcer crater, and sometimes takes longer.

5. To redefine the role of illness for the patient. Many soldiers think of an ulcer as something as "bad as cancer," and incurable. Because dietary restriction and drug therapy during periods of remission are ineffective in preventing recurrence, the physician should assure the patient at the proper time that he is well, that he can eat anything a reasonably prudent man would eat, and can engage in full military duty without detriment to his health. He may be warned that under some strong emotional stress he may have a recurrence, but that under proper medical care the ulcer will heal.

The disposition of the military patient with an ulcer is determined by three elements: (1) the disease; (2) the patient, his motivation and emotional reactions; and (3) the physician and his knowledge and attitudes about the disease and about the patient. A study of the disposition made of the patients with ulcer in a large hospital or in the Army as a whole reflects primarily the attitude of the physicians, to a lesser extent the motivations of the patients, and very little the effect of the disease itself. One is led to speculate on the possibility that duodenal ulcer occurs and recurs uninfluenced by any of our measures and without regard to the patient's relation to the military service. The approach to treatment recommended here may have some beneficial effects—if not in reducing the ulcer recurrence rate, at least in making

the patients more effective soldiers during remissions. The program would be immeasurably strengthened if it were administered close to home—by the unit surgeon or at the outpatient clinic at the soldier's home station.

SUMMARY

There has been an increased incidence of peptic ulcer in the U. S. Army in recent years, accounted for almost entirely by increased incidence among troops stationed in Europe. Intensive training, a tense international situation, and other factors constitute a chronic stress which may be of causative significance, particularly because the patient can take no action to relieve this tension.

Large numbers of soldiers throughout the Army are rendered noneffective by peptic ulcer. It is in the interest of the military service to retain the services of these men when this can be done economically; *i. e.*, as long as hospitalization for recurrent ulcer is supportable. Dietary regulation, antacid and antispasmotic drug therapy, and restrictions on place or type of duty often are not practicable and probably do not prevent recurrence.

Selection of a soldier with an ulcer for retention in the service based on study of his previous social adjustment and his personality is recommended. During this study a good doctor-patient relationship will develop which can be used to alter the patient's concept of his disease, minimizing its importance, stressing his ability to do full duty in the periods of remission, and endeavoring to have the patient recognize the relationship of emotional stress and symptoms. Patients with ulcers who have psychiatric grounds for separation should not be retained in the service.

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MEDICAL AND DENTAL OFFICER CAREER INCENTIVE PROGRAM

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THE PROVISION of adequate medical and dental care for the Armed Forces is being seriously threatened by the alarming shortages and losses of career medical and dental officers. The problem is common to all three of the armed services, but was particularly emphasized in a letter of 23 March 1955 from the Surgeon General of the Navy to the Chief of Naval Personnel and the Secretary of the Navy, which pointed out that some 300 Regular Navy medical officers had resigned in the past 20 months, while at the same time only 37 new regulars were commissioned. The Dental Corps lost 150 officers, or four times the replacement rate, over a period of 33 months.

The Chief of Naval Personnel concurred in the seriousness of the problem and recommended accomplishment of all possible administrative actions to aid the situation, along with the formation of a triservice group to recommend additional corrective action and required legislation. With the support of the Secretary of the Navy and his approval of the recommendations, the matter was presented to Frank B. Berry, M. D., Assistant Secretary of Defense for Health and Medical, the Honorable Carter L. Burgess, Assistant Secretary of Defense for Manpower and Personnel, and to the Department of Defense Health and Medical Planning Council.

As a result, the problem was assigned by the Secretary of Defense to the Task Force on Career Incentives, which handled the Career Incentive Pay Act of 1955 and the Survivor Benefits legislation. The Task Force was headed by a line officer, Rear Admiral E. W. Grenfell, USN, and was augmented by representatives of the medical departments and of the personnel branches of the three services; thus, it included both line and medical representation. The Deputy Chairman, and officer who made the majority of the presentations, was Captain David L. Martineau, USN.

The Task Force has conducted a detailed exploration of the problem of attracting adequate numbers of career medical and

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dental officers for the Armed Forces. This was studied from all possible sides, including the professional and personal aspects; the promotion, retirement, and compensation factors composing the economic aspects; and the over-all factors involved in the acceptance of military life and a military career.*

NEED FOR CAREER MEDICAL OFFICERS

First, an examination was made as to why career medical and dental officers were needed and as to where and to what extent civilian physicians could or should be used. Career military medical officers are required for several reasons, including the following:

1. One third of our 2,850,000 military personnel are overseas or on the seas, and require uniformed medical personnel to provide medical care and to ensure healthy fighting men for combat readiness. While uniformed reserve physicians can provide much of this care, continuity and need for military and clinical experience require large numbers of medical personnel on duty for a full career, or at least for longer periods than now provided through the 2-year draft.

2. There are 2,000 medical facilities or units throughout the world, many in remote locations, each requiring one or more military physicians.

3. Many specialties, such as aviation, submarine, and atomic medicine; medical logistics; and readiness planning are, for the most part, peculiar to military medicine. This was well summarized in a recent speech by the Honorable Dewey Short, ranking minority member of the House Armed Services Committee, who said:

> We have to have doctors who know how to prepare for the medical support of an amphibious operation. We have to have doctors who know all of the medical problems of logistical support of a land operation; we have to have doctors who are familiar with the human physical limitations in the problems of space; we have to have doctors who are experts in field sanitation, preventive medicine; and all of our doctors must have some conception of what a military organization is, how it functions, and what their responsibilities would be if they were called upon to take command of a medical battalion.

*The importance of this unique project is evidenced by the recent establishment of an Inter-Service Committee on Military Career Incentives on a continuing basis. This group's activities have been enlarged to include study of survivor benefits, dependents' medical care, et cetera. In addition to Admiral Grenfell and Capt. Martineau there are representatives from the three armed services, and from various offices of the Assistant Secretaries of Defense. Medical members include Col. J. H. McNinch, MC, USA, Comdr. R. Christy (MC) USN, Col. E. C. Freer, USAF (MC), Col. R. J. Benford, USAF (MC), and Dr. E. K. Cushing, Deputy Assistant Secretary of Defense (Health and Medical).—*Editor's Note.*

> So, all the time of a doctor in the Armed Forces is not confined to the treatment of people who are ill; perhaps some doctors spend most of their time treating patients, but when that doctor is serving in that capacity another doctor is studying a supply problem, or a study involving the results of underwater demolition, or the proper way to treat victims of nuclear warfare.
>
> So, it is not quite fair to our armed services to compare the ratio of physicians to the civilian population and then conclude that the ratio in our armed services should more nearly approach that ratio. The problem in our Armed Forces is to keep our people healthy and not wait to treat them after they are sick.

4. Medical care for large numbers of dependents must, of necessity, be furnished by military medical officers overseas, as well as at isolated bases in continental U. S. and at activities in continental areas where civilian facilities and professional personnel are inadequate to meet the needs.

The use of civilian physicians in *every* possible position, including all or most dependent care positions, was not considered desirable. Civilian physicians would necessarily be started at salaries from $1,400 to $2,600 per year higher than the present starting salaries of military physicians, and thus differential pays would be created among military and civilian physicians working in the same hospitals, dispensaries, or clinics. In addition to this great disadvantage, such a solution would tend to concentrate the most satisfying and desirable professional billets in the hands of civil service physicians, thus leaving sea and foreign shore duty, and small dispensary and remote continental duty for military medical officers. This would reduce the professional competence and proficiency of those military medical officers who did remain under these circumstances, and in addition would tend to result in the loss of the greater portion of present or future career officers.

THE PRESENT SITUATION

Study of the present situation disclosed that in the past 3 years two regular officers have been lost for every replacement. A turnover of nearly 45,000 medical and dental officers entering and leaving the services in these 3 years, to fulfill a mission requirement of some 16,000, has superimposed a terrific problem of training and retraining, processing, security checks, loss of time in extra travel, et cetera. This is expensive in dollars and is wasteful of scarce, highly trained manpower.

With 96 percent of the gains in medical officers in this period coming solely from compulsory service, extensive efforts have

been made to use physicians most efficiently and thereby reduce as much as possible the numbers to be drafted.

An over-all ratio of 3.0 physicians per 1,000 troop strength was also imposed on the three medical services to economize still further in the drafting of civilian physicians. However, the relatively short turnover period of 2 years combined with the 3.0 per 1,000 ratio has made working conditions for the military physicians much less attractive, with longer working hours, much less time per patient, and resultant generally reduced professional satisfaction. It has also forced the neglect of many aspects of the primary military medical mission. The large turnover of personnel often requires an excessive number of transfers, including the regular career officers who usually are the only ones available for filling vacancies as the reservists come and go. This instability of assignment, combined with necessary separations from family on sea and foreign duty, has been a great deterrent to the acceptance of a career as a military medical or dental officer.

PRESTIGE AND PAY

The study also showed that the prestige of a military medical career has deteriorated materially in recent years. The prestige of a medical or dental officer has been adversely affected particularly in regard to rank, because he is generally several years older than most other officers of his grade. Because the status of the military medical or dental officer must be based to a large extent on rank, a condition not encountered in civilian life, a military career has been considered to be seriously lacking in this respect. The necessary compulsory aspects of the special doctor draft law has also had its effect on the morale of career officers and has contributed directly to the lowered prestige of a military medical career.

The final overwhelming factor in the failure to choose a military career has been the inadequate financial return, in relation to the years of education and training and in comparison with civilian opportunities. Heretofore there has been a reluctance with the services to seek additional special pay because of possible reaction of other officer groups. However, detailed examination revealed several factors in this situation. Present pay scales and promotion criteria are predominantly geared to "length of service." Thus, a medical officer, who requires 4 years of medical school and an internship to complete his education after graduation from college, is 5 years behind his contemporaries in the service who entered immediately after graduation from college. As a result, for example, during the first 4 years of active duty after completion of internship, a naval medical officer earns less money, even with the presently authorized $100 monthly doctor special

pay, than does his service contemporary by reason of the latter's longevity credit for pay purposes and rank differentials. During his years at medical school the medical officer may have spent up to $10,000 or more for his education. In this same period a man entering service on graduation from college may have earned some $24,000 or more, with which he could have bought a car and household necessities, and possibly have started a family.

Thus under present conditions, the medical officer, with no such past earnings and with much greater educational costs and resultant debts, earns less money to pay off these debts, accumulate the necessities of living, and meet current living expenses than most other officers use largely for current living expenses. Such a low economic return for physicians and dentists in the service, compared with outside opportunities, can have only one effect. A civilian career is chosen in preference to a career in military service.

A few examples are cited: A young married medical officer in the rank of First Lieutenant or Lieutenant (jg) now earns roughly $500 monthly in total pay and allowances, including $100 Special Pay. In civilian practice he could earn up to twice that amount and, later on, could average as much as three times his military salary. The average net income (after office expenses) of all physicians in civilian practice in 1951 was over $15,000 according to *Medical Economics,* and is now estimated to be about $16,500. The young physician can start at $7,465 to $8,645 annually in civil service positions in the Federal government, yet he starts at $6,017 in the military. For this he generally works longer hours, is often separated from his family, is moved more frequently, is exposed to operational and combat hazards, and is subject to military discipline, orders, and regulations. In the Veterans Administration, all board-certified specialists earn an average of over $12,200 annually. Only a medical officer in the grade of Colonel or Navy Captain with over 22 years' service approximates this amount.

Although there are advantages to a military career, including some of definite monetary value, these alone have proved inadequate. It is obvious that sufficiently increased pay must be a major component in any effective solution of the problem.

REMEDIAL MEASURES PROPOSED

As a result of the recommendations of the Task Force, the Secretary of Defense has directed the three service secretaries to do everything possible within existing legislative and administrative authority to improve the attractiveness of a military career for physicians and dentists by improved assignment and 20-year guaranteed retirement policies; by revision of promotion

policies; by increased encouragement of attendance at professional assemblies and seminars; and by provision of 5 years' (including internship) constructive service for promotion purposes (instead of 4 years) for medical officers, and 4 years (instead of 3 years) for dental officers, in recognition of their additional years in professional medical or dental education. The latter will apply at present only to newly commissioned officers. Similar credit for officers already on active duty will require legislation.

Legislation has been recommended by the Department of Defense and is now under study by the Bureau of the Budget to provide this additional 1-year credit for promotion purposes to medical and dental officers now on the active lists. The proposed legislation would also provide longevity credit for pay purposes for these years of postgraduate educational credit. In addition, in order to compete with the higher incomes available to civilian physicians and dentists, or with the generally greater earnings under better or more stable working conditions in other Federal medical services, the proposed legislation would provide for an additional monthly contract pay up to $150 for agreements to serve for periods of from 3 to 9 years. The details as to the exact amount and form of the additional pay are still under consideration and subject to change by the Bureau of the Budget or Congress.

BENEFITS OF THE PROGRAM

With the adoption of this whole program, including the legislative aspects, a young physician would enter the service after completion of internship in the grade of Captain (in the Army or Air Force) or of Lieutenant (in the Navy) at a starting salary of about $775 per month. This salary compares favorably with the starting salaries of $620 to $720 per month of civil service physicians in view of the generally longer working hours of military physicians combined with the necessity for rather frequent moves, separation from family, and assignment at times to essential but professionally less-satisfying billets. The proposed military medical incomes, however, would still be considerably below those available in civilian practice.

As the present excessive turnover of medical officers is brought under control, service physicians should have the advantages of more regular and somewhat more reasonable and shorter working hours than do their counterparts in civilian private practice. The value of the military retirement for physical disability or after 20 or 30 years or more of service is a distinct advantage to the military physician or dentist. Free medical care for the serviceman and free or low-cost care for his family, commissary privileges, and certain survivor and other benefits also favor his

choice of a service career. The opportunity to travel for duty in different parts of the world on a reasonable rotation basis is also considered an advantage by many. It is obvious, however, that under present pay scales and conditions, these latter advantages alone have not been sufficient to attract adequate numbers of career medical and dental officers.

It is believed that the provision of adequate career incentives by the enactment of legislation along the lines proposed, in addition to the other improvements in the attractiveness of a military medical or dental career, will make possible an increase in the number of career reserve or regular medical and dental officers to about two thirds of the requirements instead of the present less than one third, and thus will provide adequate stability. Such a career corps will eliminate the need for the special doctor draft, and the remaining requirements can then be filled by the draft of physicians and dentists deferred under the regular draft to complete their education.

A workable solution must and will be found. Adequate medical care for service personnel cannot continue to be provided under present conditions.

ADVICE TO YOUNG WRITERS

In promulgating esoteric cogitations and articulating superficial sentimentalities, philosophical and psychological observations, beware of platitudinous ponderosity, jejune babblement and asinine affectations. Let your extemporaneous discantings and unpremeditated expiations have intelligibility and vivacity without thrasonical bombast. Sedulously avoid all polysyllabic propensity, psittaceous vacuity and ventriloquial verbosity. Shun double-entendre, imprudent jocosity, and pestiferous polluting profanity either obscure or apparent. Don't call names or use big words, but talk plainly, sensibly and truthfully. All of which is reminded of Disraeli's philippic for Gladstone: He was a sophisticated rhetorician inebriated by the exuberance of his own verbosity.

—Quoted by ERNEST J. ROSCOE
in *Science*
p. 851, June 11, 1954

AIR FORCE HOSPITAL FOR TRI-SERVICE CARE

MAJOR GENERAL DAN C. OGLE, USAF (MC)
Surgeon General, United States Air Force

IN THIS land of historic milestones we are assembled for a dedication ceremony which, in itself, is an important milestone for Alaska, for national defense, for the Air Force, for military medicine, and for the productive relationships between civil and military interests as well as between our three separate military departments. It is fitting that this significant Air Force hospital dedication ceremony take place in Alaska where the pioneer spirit that has made America great is still vital as was the spirit of those men and women who first peopled the forests and plains of our continental United States.

This dedication is a pioneer experience for our Medical Service as it marks the opening of the first major hospital in an extensive Air Force building program designed to support an ever-expanding military medical responsibility. It marks the first new major Air Force facility designed and programed to serve joint area requirements of three separate military departments. It serves as concrete notice to the American people, as do many other hospitals of the Army, Navy, and Air Force, that the various medical services are co-operating with each other to give American military men and women a health and medical service worthy of the world's finest and most deserving citizens. You should know that many of our airmen are cared for by the Army and Navy and, in turn, I can state that outpatient visits of Army active-duty personnel at Air Force clinics now average more than 20,000 per month.

I must hasten to add that there is no intent or need of merging the military medical departments. Such services are necessarily part and parcel of the armed force to which they belong. They must be service-identified in all phases of planning, training, and support of combat missions or weapon systems peculiar to each department or to the global and operational environment where each must serve.

Military medicine is not a commodity to be purchased on the open market any more than is the infantry division, the battleship, or a combat wing. Military medicine is a part of these.

Address at the dedication of the new hospital, Elmendorf Air Force Base, Anchorage, Alaska, 4 September 1955.

As the native meaning of the word Alaska implies, this is truly "The Great Country," and I am sure that in this setting and on this occasion we will capture a strong sense of dedication—not of this building alone, but of our very lives, minds, and hearts—to the protection of freedom, of national unity, and national security that these military forces represented here today have so long been dedicated to preserve. In this, The Great Country, we are inspired by natural vistas of grandeur, fitting monuments and symbols of America's strength and position as well as symbols of Him whose will has guided the development of our country since its beginning; whose will has given us the freedom that is a beacon for all people.

It is fitting also that this dedication be held and noticed in this land of such great strategic importance for the part that America must play in a world of threats and stress. It is significant that the world should note the attention we give, the benefits we provide, and the emphasis we place on individual health and welfare. Our military forces are not collective machines but are recognized individual men, women, and families devoted to the cause that freedom shall never be compromised.

This Alaska, which in size is one fifth that of continental United States and more than twice the size of the State of Texas, which extends west almost as far as Wake Island and beyond New Zealand, is a beautiful country of mountains, plateaus, and lowlands where our country's highest peak stands as a symbolic outpost, a sentinel of eternal vigilance.

These statements of Alaskan statistics are primarily for those here not as familiar with the territory as are you local citizens.

This country, formerly called Russian America, was ceded to the United States in 1867 after treaty of the same year had determined that the land could be purchased for the sum of $7,200,000. At that time it was estimated that the population was in the neighborhood of 30,000, the major portion of which was native. This country was known as the District of Alaska until it was created a territory by an act of Congress in 1912. The general ocean coastline of Alaska is about 4,750 miles. However, if you include the measurements of the coastline of islands, bays, inlets, and rivers to the head of tide waters the coastline measures 26,000 miles, a distance greater than the circumference of the earth. Gold was discovered in the Klondike in 1896, and no one needs to be told of all of the other resources that Alaska has contributed to United States and world economy.

* * * * * *

This beautiful hospital which we are here to dedicate was originally proposed by the Department of the Army and subsequently indorsed by the National Military Establishment as a replacement for the temporary structure at Fort Richardson. It was originally intended to provide hospitalization for all service personnel in the Anchorage area That it will do. The project was approved by President Truman 14 April 1949. The original planning was under Army jurisdiction by agreement with the Air Force. The architectural design was accomplished by the San Francisco offices of Skidmore, Owens and Merrill. By agreement with the Army, the Air Force assumed responsibility for other budgetary and related actions incident to construction following the original planning. The actual construction was authorized by Public Law 155 of the 82d Congress; appropriations were provided by Public Law 254 of the 82d Congress in November 1951. Construction under supervision of Army engineers was started the 4th of March 1953. In its finished state we now see one of the finest hospitals supporting the Armed Forces; it is certainly the largest service hospital in size and bed capacity in Alaska. Its clinical facilities are modern in every respect and offer complete care and treatment for servicemen and their dependents. These hospital services provide care for approximately 25,000 service personnel and an additional 15,000 military dependents. This building is constructed of reinforced concrete with walls of concrete masonry. It is built in three separate sections or wings seven or eight stories high, depending upon from which side you view it. Special engineering features have been incorporated to allow for earth tremor movements without endangering the structure. The hospital has approximately 1,000 rooms including private, semiprivate, and 24-bed wards, complete clinical facilities, cafeteria, Post Ex-

change, recreation rooms, barber shop, and an air-raid shelter which can seat 500 persons if used as a theater. The clinical and servicing facilities of the hospital are sufficient to expand the present 400-bed capacity to 600 beds by the addition of two floors. This building has cost the United States Government more than the original purchase price of Alaska and all of us here sincerely hope that the services it can render to the Armed Forces and to this community will give ample return for the thoughtful planning, work, and money that have gone into construction.

The Surgeon General, U. S. Navy, Rear Admiral Bartholomew W. Hogan (MC) USN (left) is met by Major General Dan C. Ogle, USAF (MC) Surgeon General, U. S. Air Force, as the former arrived at Elmendorf Air Force Base, Anchorage, Alaska.

For the past few minutes I have spoken of statistics. Statistics are interesting and necessary for a complete understanding of areas, buildings, and activities, but they fall far short of painting that more important picture of intrinsic worth and pur-

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pose. A country is not the substance of its mountains, rivers, and plateaus..... Similarly, no hospital is a hospital by virtue of concrete, steel, marble, tile, whiteness, or gleaming equipment. The meaning of anything stems from its purpose and the extent to which those responsible for that purpose are dedicated to the cause or work they represent. If we are here today to dedicate this hospital, then I say we are here today for its first dedication; there should be repeated dedications. Each new day, each new staff must be dedicated to the highest standards of medicine, and national as well as individual interests. We are here to dedicate ourselves and those who follow us that this hospital shall forever fulfill the purpose for which it was conceived—that the minds and bodies of our servicemen and their families may remain whole and effective, that they may be forever alert to maintain our national security and the freedom that is our heritage. Dedication is in truth an affirmation of faith. It is the means we have to combat the growth of doubts and cynicism and to combat a drift from faith—faith in whatever good thing that is ours to contribute to family, community, and country.

This day I feel honored indeed to represent the Air Force and the Department of Defense in the presence of civil officials and citizens of this Territory, in the presence of the United States military personnel assigned here, in the presence of the Assistant Secretary of Defense for health and medical affairs, and in the presence of the Surgeons General of the Army, Navy, and Public Health Service. We hereby dedicate this hospital and this medical service to the full sense of military medicine; to the proposition that it shall become a living part of this community; that it shall serve with equal devotion each of the three military departments; that it shall forever be a focal point of interservice solidarity and co-operation; to the purpose that its staff shall be tireless in their efforts to acquire the highest of knowledge and skill necessary to perform their part in preserving the strength and integrity of our Armed Forces. And finally I would like to dedicate this entire audience to a reaffirmation of faith in America and to the torch of freedom she holds before the world. Such dedication should not be taken lightly, and the tasks and principles to which we are here dedicating this building and ourselves may be hard.

MEDICAL EDUCATION FOR NATIONAL DEFENSE: THE MEND PROGRAM

JAMES R. SCHOFIELD, *M. D.**

PHYSICIANS today must be prepared to serve effectively in the Armed Forces or in situations of disaster handled by civilian agencies. For some years evidence has been accumulating that a majority of recent graduates of our American medical colleges are inadequately trained and motivated to assume these traditional responsibilities of the medical profession.

The Medical Education for National Defense (MEND) program is designed to acquaint the faculties of our medical schools with the problems of military medicine and of medical care of mass casualties, and with the solutions that are being developed to meet these problems. The 16 colleges of medicine presently affiliated with the MEND program have accepted the obligation of teaching the fundamental concepts related to this area of medicine, in order to better equip young physicians for their responsibilities as medical officers in service, and in civil defense. This may be accomplished by formal presentations to medical students; and by increasing the appreciation of the problem by the faculty, so that the entire curriculum can be appropriately oriented. This article describes the MEND program.

In 1950 the Executive Council of the Association of American Medical Colleges appointed a subcommittee, later known as the MEND Committee, to study the existing medical curricula and to make recommendations regarding supplementation with whatever additional material might be needed by the medical graduate for effective service in time of national emergency.[1] As a result of this study, the MEND Committee recommended that a series of pilot experiments in curriculum supplementation be held at a few medical schools representative of the total group of 81 throughout the country. The schools selected were the medical colleges of Buffalo, California (San Francisco), Cornell, Illinois, and Vanderbilt Universities.

ASSUMPTIONS AND METHODS

Representing the American Medical Association and the Association of American Medical Colleges, the MEND Committee,

*National Coordinator, MEND. Office address: Bureau of Medicine and Surgery, Department of the Navy, Washington 25, D. C.

Stanley W. Olson, *Baylor,* Chairman; John B. Youmans, *Vanderbilt;* Stockton Kimball, *Buffalo;* Lawrence Hanlon, *Cornell;* George V. Byfield, *Illinois;* and John B. Lagen, *California (San Francisco);* proceeded on the assumption that whatever was done would have to be soundly conceived from an educational point of view and would have to be consistent with the educational philosophy of each school. Therefore, it was agreed that:

1. Each school should be free to work out its own program according to local custom;
2. The individual program should be developed through the faculties of the respective institutions;
3. The programs should be designed to stimulate students and to create appropriate attitudes as well as to teach appropriate material;
4. Emphasis would be placed on professional rather than administrative and organizational topics; and
5. The program would be evaluated as critically as possible.

The five pilot schools began their experiment in the fall of 1952; and by January 1954 the Chairman of the Committee was able to give a detailed report of the educational approach to the problem as used at each of the pilot schools.[2] From this article one can see that the principle of individual faculty interpretation has been maintained.

Two different approaches were used: (1) Cornell and Vanderbilt deliberately avoided separate courses for MEND on the premise that the new material should be completely integrated into the regular curriculum. (2) At the University of California a separate course in Civil Defense and Military Medicine was developed. (3) At Illinois and Buffalo a combination of these two policies was adopted. Material was presented to all four undergraduate levels at Cornell and Buffalo; while at Vanderbilt, Illinois, and California special attention was first given to the freshman class with progression with that class year by year until all four levels could be affected by the changes in the curriculum. The presentations were mandatory except for some optional showings of films in two of the schools.

A number of guest speakers drawn from the Federal services visited all of the campuses in order to participate in the teaching program. All of these visits were made in response to invitation and sponsorship by the local faculty. The MEND Committee believe this to be one of the most desirable features of the program.

From the beginning there was good acceptance of the program by students, faculty, and administrative officers of the colleges. All five pilot schools have desired a continuation of their affili-

ation with MEND and these faculty members have been very active in orienting newcomers to the program.

SUPPORT BY FEDERAL SERVICES

The Army, Navy, Air Force, Office of the Assistant Secretary of Defense (Health and Medical), the U. S. Public Health Service, and Federal Civil Defense Administration provide the schools with necessary teaching materials, sponsor seminars in military medicine, and furnish visiting speakers at the invitation of the participating colleges.

Financial support for the MEND program is provided by the Public Health Service and the Department of Defense. A grant is negotiated with each of the participating colleges for an average amount of $11,000, to include a part-time salary of $5,000 for a local coordinator, the balance to cover the expense of faculty travel and cost of teaching materials rented or purchased. The MEND program at its fullest possible expansion to all American medical colleges shall cost no more than an estimated 40 to 50 percent of the annual operational expense of the medical ROTC program formerly in operation. As MEND has developed, representatives of the Federal services upon numerous occasions have given written and public support to the program, and the several Surgeons General have more than adequately fulfilled their promises to provide teaching materials and support to the participating schools.[3-5]

EXPANSION

Beginning with the academic session 1955-1956, the MEND program was extended to the following colleges: Tufts, Pennsylvania, Georgetown, Medical College of Virginia, Emory, Ohio State, Baylor, Wisconsin, Colorado, and Washington (Seattle). Michigan also participates in the program without financial support at this time. Present plans are to extend affiliation to 10 additional schools as of 1 January 1956, and continue to add 10 each year until all who desire affiliation can be given that opportunity.

MEND ACTIVITIES

Symposia

In order to acquaint faculty members with specific problems in military medicine, the participating Federal services have sponsored a number of teaching symposia attended by both medical faculty members and military physicians. Sessions have been held on the following subjects: "Blood and Blood Substitutes," "Psychiatry in Mass Casualty Care," "Biological Warfare," "Medical Care of Mass Casualties," "Shock," "Stress," and "Lepto-Spiral Diseases."

Faculty Travel

As new groups of faculty members affiliate with the program, the MEND Committee and the Federal services sponsor a Coordinators' Conference designed to give the MEND Coordinators of each school a briefing on the nature of the problems encountered by the military medical officer and what is being done to meet these problems. In March 1955, some 30 deans and coordinators visited New London Submarine School, National Naval Medical Center, National Institutes of Health, Armed Forces Institute of Pathology, Army Medical Service Graduate School, Medical Field Service School in Brooke Medical Center, and Air Force School of Aviation Medicine at Randolph Field. It is expected that the itinerary of the coordinators' tour will be varied each year.

Individual faculty members of the MEND schools are encouraged to visit Federal installations where research and teaching are being done, in order to awaken new possibilities for curricular change or supplementation. It is believed that travel by faculty members to the Federal installations is by far the most significant activity of the MEND program, and such travel is supported by the largest item in the local budgets of the MEND schools.

Teaching Materials

All of the training films and professional medical films used by Army, Navy, Air Force, Federal Civil Defense Administration, and U. S. Public Health Service are available to the MEND schools and are widely used. Some films have been duplicated and copies incorporated in individual school libraries.

A considerable series of technical manuals, handbooks, and texts prepared by the Federal services are on special "MEND shelves" in the school libraries, and are used in departmental teaching.

Pathology of Agents of Warfare

Dr. John L. Shapiro, Department of Pathology, Vanderbilt, and I recently began working with pathologists at the Armed Forces Institute of Pathology and with medical officers at a number of other Federal installations, in the development of an extensive collection of teaching materials on the subjects of: cold injury, radiation injury, beta-ray (fall-out radiation) and systemic radiation effects, trauma from missiles of all types, burn injury, and atmospheric and underwater blast injuries. The materials will take the form of photomicrographs and color lantern slides, and will be reproduced and made available to the schools. We estimate that some 250 items will be included in the collection.

Visiting Speakers

An increasing number of medical officers and scientists are being invited to visit the medical colleges in the capacity of guest lecturers. The response by the students to this phase of the MEND effort has been excellent. It provides the young students with a direct opportunity to meet career service officers in person and to learn firsthand of the achievements of military medicine. A "speakers bureau" for MEND has been prepared and is growing rapidly due to the interest of medical officers and the strong support of authorities of the Federal medical services.

FIELD TRAINING IN MASS CASUALTY CARE

In an effort to introduce medical students and house officers to the problems of mass casualty care, the MEND Coordinator at Baylor, Dr. John Howard (now at Emory University), and Dean S. W. Olson last April organized "Operation Mercy," a civilian version of a mobile Army surgical hospital with a sorting station. To simulate reality, this unit was called out without warning, was completely equipped by four hospitals in Houston, and was transported 90 miles to the adjoining city of Beaumont in response to a practice distress call.

Two hundred and fifty major surgical "casualties" had been tagged and scattered around a disaster area. The sorting station was established in a warehouse, the hospital in an elementary school. Distant evacuation to Houston was by rail transport. Litter bearers brought the casualties to the sorting area where triage was effected and necessary resuscitation done. Appropriate casualties were moved to the improvised hospital. There they were prepared and draped, and indicated surgical procedures were timed. The first "patient" was admitted to the improvised hospital 5 hours and 15 minutes after the initial alert had been received in Houston, 90 miles away.

Records of all medical treatment and disposition were kept and later studied by the students under direction of the Department of Surgery. Visiting medical officers who served as judges favorably evaluated this type of civilian training maneuver and indicated that much of the difficulty and confusion existing in a disaster or combat area had been successfully reproduced. Several other MEND schools are investigating this plan as a means of orienting students to mass casualty care.

SYMPOSIUM ON BASIC SCIENCES IN AVIATION MEDICINE

The first scientific session sponsored by MEND during 1955-1956 will be held at the School of Aviation Medicine, Randolph Field, 14-15 November 1955. The Air Force and Navy are presenting a program that should be of interest to professors of

physiology, biophysics, biochemistry, pharmacology, and pathology. Eight sessions will include consideration of: Biological effects of decreased atmospheric pressure; biological effects of increased atmospheric pressure; biochemistry in aviation medicine; radiology in aviation medicine; investigation of biological causes of aircraft accidents; decompression sickness; oxygen poisoning; and chronic adaptation to decreased oxygen consumption. In addition to the formal discussions there are to be visits to laboratories, demonstrations of research results, and informal discussion sessions. It is anticipated that this is the first of a series of annual symposia on Aviation Medicine, to be held at different air bases in the country.

Other symposia during March and April 1956 will concern "Cold Injury" and "Infectious Diseases."

By special invitation, MEND faculty members are to attend the 62d session of the Association of Military Surgeons, which will be devoted to problems of mass casualty care.

CONCLUSIONS

It is obvious from a review of MEND activities that the experiment has been successful and that the method is achieving wide adoption. There is no fixed plan or mandatory curriculum imposed on a school affiliated with MEND; each faculty is encouraged to go its own way, using the experiences of others as it chooses, and seeking fresh approaches to the problem of curricular modification. There can be no question of Federal control over a faculty of medicine; rather, there is an honest and sensible encouragement for civilian and military medical authorities to meet and discuss their individual and common problems, and to share ideas for the mutual benefit of all concerned.

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Clinicopathologic Conference

U. S. Naval Hospital, Philadelphia, Pa.*

DYSPNEA AND PTOSIS

Summary of Clinical History. A 48-year-old man's illness began five weeks prior to admission with "sour stomach" and anorexia. Pain in and about the left eye was present for three weeks prior to admission. Ptosis of the left upper eyelid with difficulty in moving the left eye developed, disappeared, then reappeared shortly before admission. A physician told him he had heart trouble and gave him three tablets of digitalis daily, plus "shots" to make him "lose water." Previously he had been receiving one tablet of digitalis daily for eight years for pulmonary emphysema productive of exertional dyspnea and orthopnea. His shortness of breath and fatigability increased during this illness. There was no weight loss.

His father and one sister died of tuberculosis. His mother died of "old age."

Physical Examination. On admission he seemed mentally dull, pale, and only partially oriented. His temperature was 98° F.; pulse, 44; respiration, 16; and blood pressure, 126/65 mm. Hg. There was ptosis of the left upper eyelid. The right pupil reacted well to light, on accommodation, and on consensual stimulation. The left pupil was slightly larger than the right, and reacted poorly to light, little if any on accommodation, and poorly to consensual stimulation. Right external ocular movements were full; the left were limited to minimal internal rotation. Diplopia was present; there was no exophthalmos, and by confrontation visual fields were full. There was moderate arteriovenous compression of retinal vessels but no papilledema. The facial muscle movements were normal. No objective changes in facial sensory reception were demonstrated. The tongue was red and smooth at the tip. Percussion over both lungs was hyperresonant, and breath sounds were distant. The cardiac apical impulse was not visible. The heart sounds were distant and no murmurs were audible. The car-

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diac rate was 50 beats per minute with an occasional premature contraction. The abdomen was soft and not tender to palpation. The liver and spleen were not palpably enlarged, and there were no masses. There was no pedal or pretibial edema. Postural hypotension was noted, one determination being 82/64 mm. Hg sitting, and another, 110/72 mm. Hg supine.

Laboratory Studies. The red blood cell count was 5 million per cu. mm.; hemoglobin, 13.9 grams per 100 ml.; and white blood cell count, 9,600 per cu. mm., with 45 percent neutrophils, 51 percent lymphocytes, 2 percent eosinophils, and 2 percent basophils. Urinalyses showed an occasional white blood cell and 0 to 2 red blood cells per high power field, and a specific gravity of 1.003. Roentgenograms of the skull showed erosion of the posterior clinoid processes. A nodular, noncalcific density about 1 by 2 cm. was seen on the roentgenogram of the chest in the left upper lung field at the level of the first interspace, anteriorly. The heart and aorta appeared normal.

An electrocardiogram revealed a sinus bradycardia with a rate of 48 per minute with an occasional premature ventricular contraction. The P-R interval was 0.20; QRS, 0.10; and Q-T, 0.43 second. P waves were normal. The QRS complex showed a small R, deep S in leads I, aVL, V_1-$_3$; there was a small Q wave in II, III, aVF, and V_7; S waves were present through V_7. The RST segment was slightly depressed in $V_{1,2,3,6,7}$ and moderately depressed in V_4 and V_5. The T waves were low but upright in lead I, inverted in leads II, III, aVF, and V_5-$_7$; diphasic in V_2-$_4$ and aVL; isoelectric in lead V_1 and upright in aVR. A prominent U wave was noted. The axis was +90.

The tracing was interpreted as ". . . borderline low voltage and nonspecific S-T segment deviation and T-wave changes. The possibilities of electrolyte imbalance and/or metabolic disease (hypothyroidism) present themselves. Emphysema could also account for some of the changes noted."

Blood chemistry was as follows: Serum chloride, 102 and potassium, 4.74 mEq. per liter; glucose, 117 and blood urea nitrogen, 11 mg. per 100 ml.; total protein, 6.3 (albumin 4.3, globulin 2.0) grams per 100 ml. Findings of the Kahn test were negative. Lumbar puncture on the fifth hospital day yielded slightly yellow fluid under 80 to 90 mm. of pressure. No blood cells were reported and the protein was 70 mg. per 100 ml.

Course in Hospital. During his hospitalization the patient had occasional episodes of headache, with sudden onset, followed by "blackout" with involuntary urination, cold moist skin, and "muscle spasms." On the twelfth hospital day findings of an arteriogram of the left carotid were negative. The day following he

developed paresis of the right lateral rectus muscle and limitation of upward gaze of the right eye, with dilatation of the right pupil and failure to respond to light. The patient became more apathetic but remained fully conscious. He was found dead in bed at 0435 hours on the fourteenth hospital day.

DISCUSSION

Doctor Kaplan:* To summarize our findings in this stimulating case we have a 48-year-old man whose history encompassed that of tuberculosis in his family, his own past history being that of exertional dyspnea, orthopnea, and emphysema of apparently eight years' duration. We note that he had been on digitalis all of this time "for pulmonary emphysema productive of exertional dyspnea and orthopnea." We also have been told that for some indeterminate length of time, apparently a matter of several weeks, he was on three digitalis pills a day, and I assume that that was up until the time of admission. This is a rather prodigious amount of digitalis. His last illness was that of five weeks of anorexia and "sour stomach," and I take that to mean the man was probably complaining of nausea. He had progressive shortness of breath, noticeable ptosis of the left eye, and difficulty in ocular movements of the left eye. He had a subjective complaint of diplopia and also pain in the area of the left orbit. The significant findings were mainly confined to cerebral signs in a dull, poorly oriented patient with a temperature of 98° F. and a pulse rate of 44. His left pupil was larger than his right. All of the pupillary reflexes were diminished on that side. We are not told whether he had corneal anesthesia or not. His external ocular muscles were paralyzed completely on the left side except for minimal internal rotation. We are also told that by confrontation his visual fields were full, but perimetry was not done so central scotomata might still have existed. There was no papilledema.

The blood cell count was normal. I am surprised that, with such a long history of emphysema and presumably of cardiac difficulties, there was no polycythemia. One urinalysis is given which is of no particular help except for the provocative specific gravity of 1.003. We are not told whether this man had polyuria or polydipsia suggestive of diabetes insipidus; in a cerebral lesion this certainly would have to be considered an important clinical sign. Lumbar puncture revealed "slightly yellow" fluid and an elevated protein, no increase in cells, no increase in pressure. The other thing we are told is that this man's course was downhill. He was complaining of progressively severe headaches. As a terminal event the right eye was involved as well as the left. He had what were apparently convulsive seizures, "blackout" with involuntary urination, cold moist skin, and "muscle spasms."

I try to put all of these symptoms together. The first thing that I think of is an intracranial lesion, the nature of which is not readily apparent. You have to think of primary lesions such as pituitary lesions, cavern-

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ous sinus inflammation, possible craniopharyngioma or Rathke's cleft tumor, or something secondarily involving the brain such as tuberculoma, bronchiectasis with a brain abscess, or metastatic carcinoma. I wonder before we go any further whether we might possibly see the x-rays and the EKG.

Doctor Palagonic:* X-ray examination of the chest in the posteroanterior (fig. 1), apical lordotic, and lateral projections reveals a nodular

Figure 1. Posteroanterior view of the chest, revealing a nodular density in the first left anterior rib interspace.

density in the first left anterior rib interspace. It measures about 1 by 2 cm. As far as can be determined, there is no calcium within this nodular density. Cavitation cannot be excluded. The remaining lung fields are clear and hyperaerated. Both diaphragmatic leaves are depressed. The heart is normal in size, shape, and position. In the lateral projection this nodular density appears to be localized in the posterior apical segment of the left upper lobe. There is an increase in the anteroposterior diameter of the chest, and this with hyperaeration of the lungs is strongly suggestive radiographically of generalized pulmonary emphysema.

*Lt. Leonard A. Palagonia (MC) USNR, Medical Officer, Radiology Service.

X-ray examination of the skull (fig. 2) in both lateral projections reveals erosion of the dorsum sellae and the posterior clinoid processes. There is no widening or increased depth of the sella turcica. There is a suggestion of erosion extending into the sphenoidal sinus. The pineal gland is calcified and, as seen in the lateral and anteroposterior projections of the skull, it does not appear to be displaced. There is calcification of the choroid plexus.

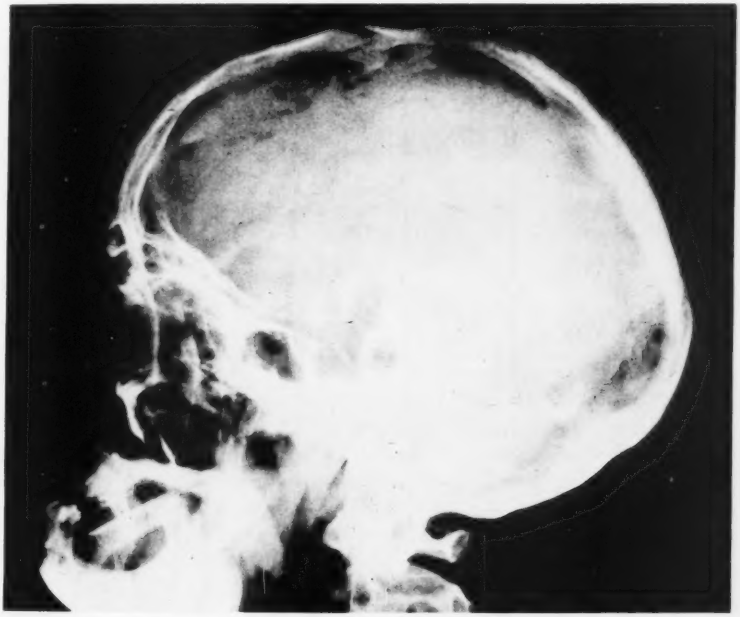

Figure 2. Lateral view of the skull, showing erosion of the dorsum sellae and the posterior clinoid processes.

Doctor Kaplan: I would like to take issue with Doctor Palagonia on the x-ray interpretation. In the chest, I think we are dealing with a definitely enlarged main pulmonary artery with dilatation of the lesser pulmonary arteries. These seem to be congested and the congestion spreads from the hilus out toward the periphery of the lung fields. This suggests a cor pulmonale. The electrocardiogram (fig. 3) is of interest, first because of the slow auricular and ventricular rate which measures about 45 to 50 per minute. The P-R and the Q-T intervals are normal considering the rate. There is a definite right axis deviation which is seen by the deep S wave in lead I and by the tall R wave in lead III. One also notices the infrequent premature ventricular contractions that occur. The unipolar leads show marked clockwise rotation of the electrical axis with left ventricular pattern not being reached until we get to the V_7 position. The transitional zone appears to be in V_6 which is a definite

Figure 3. Electrocardiogram revealing premature ventricular contractions and axis deviation + 90°.

shift to the left. We notice that the S-T segments are depressed in leads V_2, V_3, V_4, V_5, and V_6 with the initial portion of the T wave being inverted and the terminal portion being upright. This terminal upright may possibly be a U wave. I think it is fair to say that, with this marked right axis, the depression of the S-T segments, and the marked clockwise rotation across the precordium, we certainly are dealing with a right ventricular strain pattern. From this single tracing it would be impossible to say whether this was an acute or chronic cor pulmonale, but when we examine the clinical history we see that this man had emphysema for many years. I think we are on safe grounds by concluding that we are dealing with a chronic cor pulmonale. The possibility of digitalis intoxication is brought up by the large amounts of digitalis that we know this man was getting. I would not be inclined to think that this tracing shows signs of digitalis toxicity. I think that the S-T segment depressions and the terminal upright T wave certainly show the effect of digitalis, but I believe that the slow rate was from other sources, probably, in this case, cerebral. The occurrence of the premature ventricular extrasystoles are not frequent enough to warrant the diagnosis of digitalis toxicity. Another factor against it would be the normal P-R interval. I must admit from the history I am surprised that more digitalis effect is not noticed.

Now let us see whether we can put this story together and come up with an answer. From what we have seen we are rather certain that this man had emphysema. We are not sure of the cause of this. There was no mention of asthma in his past. There was no mention of anything hereditary. I am surprised that there was no polycythemia, but this is not always found in this type of problem. The cardiac signs that we have seen, the pulmonary artery dilatation on x-ray examination, the signs of right ventricular hypertrophy on the EKG would certainly go along with an obstructive emphysema. I don't believe that the emphysema played a major part in this man's demise, however. A question of digitalis intoxication has come up; we know that this man had been on large doses, we know that certain central manifestations were apparent, and yet we find an absence of gastrointestinal symptoms—no nausea, vomiting, or diarrhea. We are not told of any disturbance of color perception. The electrocardiogram does not show any definite hyperirritability of the ventricular myocardium and there is no great degree of block at the AV node, so I think we are forced to conclude that the slow rate was on a basis other than digitalis intoxication.

This leaves us with the brain lesion. We have general symptoms such as lethargy, anorexia, and personality changes, the man being described as having been dull and unresponsive. We have the slow pulse, the elevated protein in the spinal fluid, and what appears to be some xanthochromia. The specific localizing signs that we have are mainly left eye signs with involvement of the left third, fourth, and sixth cranial nerves, and the x-ray film has shown us that the sella turcica was eroded. We usually think of this as being a localizing sign but it

Figure 3. Electrocardiogram revealing premature ventricular contractions and axis deviation + 90°.

has been pointed out that any increased intracranial pressure may cause atrophy of the clinoid processes. I think we are forced to the conclusion that our lesion was in the area of the sella turcica with involvement of the cavernous sinus, mainly the third, fourth, and sixth cranial nerves. The lack of papilledema and the lack of increased cerebral spinal fluid pressure on spinal tap does not militate against a lesion in this area. We know that the usual reasons for papilledema are blockage of the internal cerebral spinal fluid mechanism with involvement of the lateral ventricles, the aqueduct of Sylvius, or the foramina of Luschka and Magendie in the posterior fossa. Around the pituitary, the ventricular system is usually not involved and therefore no great increases in pressure need be expected. Papilledema is most apt not to occur with a lesion in this area.

Now let's examine our possibilities. Could this have been a cavernous sinus infection? This has been described as involving the three cranial nerves mentioned; but the absence of fever, the absence of cells in the cerebral spinal fluid, the absence of signs of inflammation and venous stasis periorbitally all rule against this possibility, and so I think we're safe in discarding this. Could this be a pituitary lesion? If so, we would have to decide whether it was above or below the diaphragma sellae. The usual lesions below the diaphragma sellae are the chromophobe tumors which destroy the active elements in the pituitary, but we are not impressed by any severe panhypopituitarism in this patient. We are told the patient was listless, anorexic. We have two urinary specific gravities of 1.003 so we are not sure whether there was a diabetes insipidus present. The possibilities of an acidophilic tumor or a basophil tumor are likewise considered unlikely possibilities because of the lack of specific endocrinopathies. The lesion above the diaphragma sellae that we would have to consider would be a craniopharyngioma.

While these remain possible there are several things that militate against them. The craniopharyngioma usually occurs in younger people, usually between the ages of 10 and 20. The craniopharyngioma is very frequently calcified, which this lesion apparently was not, and does not usually extend far enough laterally to involve the ocular cranial nerves. The first signs that we see in these tumors are usually pressure on the optic chiasm, producing central scotomata. Again, these tumors are notorious for causing diabetes insipidus by disrupting the hypothalamic fibers to the posterior pituitary. This is an unknown factor in this problem.

We are then forced to look for some other focus for our lesion and the logical place, with the pathology we have before us, is the lung. There was a familial history of tuberculosis so we could assume that we are dealing with a tuberculoma which frequently involves the base of the brain. Again, with the lack of fever, lack of cells in the cerebral spinal fluid, and the rapid downhill course, this is a rather unlikely possibility.

We must consider another type of inflammatory lesion, that of a brain abscess secondary to pulmonary bronchiectasis. It is known that in some few cases of long-standing bronchiectasis brain abscesses occur, but again we are missing the expected signs of fever and of leukocytosis in the cerebral spinal fluid. As I first read this protocol and noticed the mention of ptosis and of a lesion in the left upper lung field I thought of a Horner syndrome, but on closer inspection this does not hold. We have no myosis, no mention of decrease in homolateral facial sweating, and no enophthalmos, all of which are the usual findings in Horner's syndrome. Also, Horner's syndrome is not productive of ocular palsies, which were very definite in this patient.

It is well known that in about one third of all patients with carcinoma of the lung we have brain metastasis. Though it is not a common occurrence these metastases may go directly to the pituitary gland and cause the condition that we see here, of erosion of the sella turcica and the slow destruction of the functioning pituitary tissue. Lastly, we must look for even more distant sites. If this lesion in the lung can be considered a metastasis, we have to think of sites that will metastasize to both lung and brain. The lesions that come to mind are hypernephromas, adrenal gland carcinomas, or thyroid carcinomas. We have nothing in our protocol to incriminate these structures, so they are merely mentioned for completeness. To sum up once more then, we are dealing with a rather rapid downhill course of a man with emphysema, pulmonary hypertension, and a lesion in the upper lobe of the left lung. We have cerebral involvement which localized in the area of the pituitary, destroying the sella turcica and involving the cavernous sinus and its adjacent structures, the ocular cranial nerves. We are told that as a terminal event the right ocular nerves also became involved and we might, therefore, conclude that this lesion expanded in both directions, involving both cavernous sinuses and their structures. We are also told that the patient had convulsions as a terminal affair and, if we are hypothesizing metastasis to the brain, we are within our rights to postulate another metastasis to the motor cortex. With the whole problem put together, then, I am left with just one diagnosis, so I'll stick my neck out on this being a bronchogenic carcinoma with multiple metastases to the brain, the primary one involving the pituitary gland, sella turcica, the left cavernous sinus, the left third, fourth and sixth cranial nerves, and perhaps the right cavernous sinus and the same nerves on that side.

Doctor Capron:* In discussing this patient there are several basic factors to be pointed out. The most important, I believe, is that, although he was chronically ill for years, his actual terminal illness was of brief duration—about seven weeks. Another factor is that his death was not due to a generalized wasting illness but rather to one of disturbed and interrupted vital functions.

*Lt. Comdr. Manley J. Capron, Jr. (MC) USN, Head, Chest Branch, Medical Service.

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First were the symptoms of fatigue and shortness of breath. We can account for this, to some extent at least, on the basis of pulmonary emphysema. The emphysema was not too severe in that there was no marked chest fixation or clinical evidence of right heart strain. The lesion found in the chest x-ray in the left upper lobe was single. It is not difficult to correlate the findings in the chest and brain, for in both neoplastic and infectious diseases these organs are frequently both involved. As to tumors, Ferguson, cited by Norris and Landis,[1] reported that in 29 cases of metastatic brain tumors, nine were of pulmonary origin; Dosquet found 37 percent of 105 cases, and Fried, 47 percent of 19 cases.

The spread to the brain of pulmonary neoplasms and infections can be either by direct vascular penetration or via the posterior bronchial veins or the vertebral plexus. Bronchogenic tumors and many varied infections tend to metastasize to the brain. In contrast it is extremely rare for a primary brain lesion to metastasize to the lungs.

Our next effort should be to localize the obvious brain lesion in this patient. It evidently was not easy because cerebral angiograms were attempted. We note first the absence of "choked disk." The ocular signs tell us that the lesion affected the right oculomotor nerve. The earliest signs were unilateral. This nerve arises from the nucleus in the gray substance in the floor of the cerebral aqueduct and extends in front of the aqueduct for a short distance into the floor of the third ventricle. Fibers then go forward through the tegmentum, red nucleus, and medial substantia nigra, emerging from the oculomotor sulcus on the medial side of the cerebral peduncle. It also has fibers to the ciliary ganglion. Since this nerve controls convergence, accommodation, and sphincter fibers of the iris besides the usual muscles, we know it is involved. The absence of exophthalmos puts the lesion behind the orbit. I am against a frontal lesion in that sight was intact, the psyche not too aberrant, and there was no disturbance of smell or speech. The intact visual fields are against an occipital defect. The basal ganglia seem intact because of the unilateral symptoms. Not to waste time, it seems the lesion here is typical of those in the area of the midbrain, particularly of the quadrigeminal plate, more so of the colliculi. Plate lesions are usually bilateral. A lesion on the left in the colliculi would tend to compress the oculomotor and abducent nerves along the aqueduct of Sylvius. If it extended into the red nucleus there would be ataxia and tremor. Thus it seems the lesion would be more localized in the left colliculi and red nucleus. It could almost be classified as a "Weber's syndrome" (that of paralysis of the third nerve and some evidence of hemiplegia on the opposite side). As regards this case, a midbrain location would also explain the erosion of the posterior clinoid processes. Pressure on the aqueduct of Sylvius would cause the paroxysmal headaches, syncope, and tonic spasms—the syndrome involving the third ventricle. Further pressure could cause the bradycardia. Vagal bradycardia is improbable in this case.

As usual, we always try to explain all the signs and symptoms on the basis of one causative agent. The hardest finding to correlate is that of the abnormal EKG. I believe we could discuss this for some time. The S-T segment and T-wave abnormalities are nonspecific. In epicarditis the changes are often nonspecific. Since we are looking for a single diagnosis, let us consider pericarditis. Frequently pericarditis, particularly in tuberculosis and allied granulomatous infections, is asymptomatic. In any case of pulmonary infiltration of the demonstrated configuration, and of a brain lesion, bronchogenic carcinoma would be the prime suspect. It, however, does not involve the pericardium other than by direct extension locally or from a metastatic lymph node. This is not apparent here. Bronchogenic carcinoma also is a relatively slow-growing lesion; it would seem unlikely that a brain metastasis of this sort would cause death in such a short time.

Thus we come to tuberculosis. Pulmonary and cerebral involvement in this disease is, of course, not uncommon. Brain involvement, however, is usually secondary to miliary disease and, although miliary disease can be considered, I cannot recall a case with death ensuing in such a short time without evidence of wasting, fever, and terminal spinal meningitis. A single tubercle could be in the brain but I wonder if in its granulomatous state it could be guilty of such localized and fatal effects. Regardless, though possible, even with adrenal involvement, I tend to hedge on either carcinoma or tuberculosis as a single cause. I might add that perhaps I'm swayed by the fact that either answer would seem somewhat too easy for a case in this conference.

In the protocol there was one other statement that bothered me. It was: "The tongue was red and smooth at the tip." I wonder if it was sore, too. This certainly is a benign statement, but it brings to mind another entity. Fungus infections seem to prefer the edges and tip of the tongue. One could certainly not exclude one of these as a cause of the pulmonary lesion. Actinomycosis is one of the most common. As a cause of pericarditis and of a lesion in the brain it is very rare. In the brain, however, it amounts to a fulminating disease and is associated with extreme fatigue. The use of the term "yellow" rather than "xanthochromic" in the description of the spinal fluid is also suggestive. Actinomycosis has been said to cause a yellow spinal fluid. Actinomycosis could thus cause all the signs and symptoms, and findings in this case. Against it, though, is the fact that it is normally manifested in rather grossly evident disease, especially about the neck, affecting the lymph nodes and often the skin. It may originate in the sinuses. Was there any evidence of dermal granulomatous disease in this case?

Doctor Rulon:* No.

Doctor Capron: Regardless, the diagnosis I consider the most likely as a single entity is actinomycosis involving the lung, brain, and peri-

*Lt. Comdr. David B. Rulon (MC) USN, Resident, Pathology Service.

cardium. As Doctor Kaplan has stated, bronchogenic carcinoma is statistically much more likely than actinomycosis involving the lung, brain, and pericardium. Tuberculosis I consider unlikely.

Doctor Aronson:* I would like to say something about the arteriogram here because of the fact that one of the discussants thought that it had been done because of clinical difficulty in localizing the lesion. This was not so much the reason for doing the arteriogram as was the clinical diagnosis of aneurysm. This history and the clinical findings, I think, were fairly in keeping with an intraclinoid type of aneurysm of the internal carotid, impinging on the cavernous sinus and giving the so-called cavernous sinus syndrome which consists of partial or complete palsy of the third, fourth, and sixth nerves and also the pain characteristic of the first division trigeminal nerve, together with hyperesthesia in the forehead which we elicited when we first examined the patient. Clinically we had to localize the lesion at the base, and aneurysm was the first choice as to type of lesion. Other possibilities considered were similar to those already mentioned, but malignancy at the base was foremost of these because of the rapid course, and it became the most likely when the aneurysm failed to materialize. Thus the arteriogram was done to investigate the possibility of aneurysm rather than to localize the lesion which we believed was in or near the cavernous sinus.

Doctor McMullin:** Well, I'll make a comment on this. Here is a man who had been afflicted with emphysema for a number of years but who had a rather rapid terminal illness. A focal lesion in the midbrain would not account for his sensorial clouding which was apparent on admission, and the progression of this confusion can only be considered as due to toxic or other destructive changes in the brain. The EKG—well, I'm going to stick my neck out. On the basis of seeing cases similar to this, I would like to make a first choice of tuberculosis or a similar chronic granulomatous lesion involving and encircling the midbrain and finally terminating with Parinaud's syndrome, *i. e.*, paralysis of upward gaze from a lesion in the collicular region. Besides this there could be a diffuse process involving the cortex of the brain. For some strange reason we do sometimes see tuberculous meningitis missed because there may be no high cell count or nuchal rigidity until almost the terminal stages.

Doctor Kaplan: The only thing which wasn't mentioned in the protocol but which was mentioned when Dr. Palagonia read the x-rays was that perhaps there was some involvement of the sphenoidal sinuses in this erosive process also. I remember thinking at that time that perhaps we are dealing with an adenocarcinoma arising from the sinus lining, working its way up through the brain, and eroding into these areas, thus involving the whole thing. That's a long shot. I'm not changing my original diagnosis but I think it should be mentioned.

*Lt. Neal I. Aronson (MC) USNR, Neurosurgeon, Neurosurgery Service.
**Capt. John F. McMullin (MC) USN, Chief, Neuropsychiatric Service.

Clinical diagnosis:
Aneurysm, internal carotid artery

Dr. Kaplan's diagnosis:
Bronchogenic carcinoma, with metastases to brain and pituitary

PATHOLOGIC FINDINGS

Doctor Rulon: The diagnosis in this case is bronchogenic epidermoid carcinoma of the lung, with metastases in the sella turcica eroding the posterior clinoid processes, and extension to the left third, fourth, and sixth cranial nerves, the area of the tuber cinereum, and the right cerebral hemisphere. This finding in this patient points up the fact that the size of the primary pulmonary lesion, which in this case was about 2 cm. in maximum diameter, has no necessarily constant relationship to its curability by resection. The primary lesion was of relatively undifferentiated epidermoid nature (fig. 4). The mass in the sella turcica filled the sella and destroyed portions of the posterior clinoid processes. The sphenoidal sinus was opened and found to be normal.

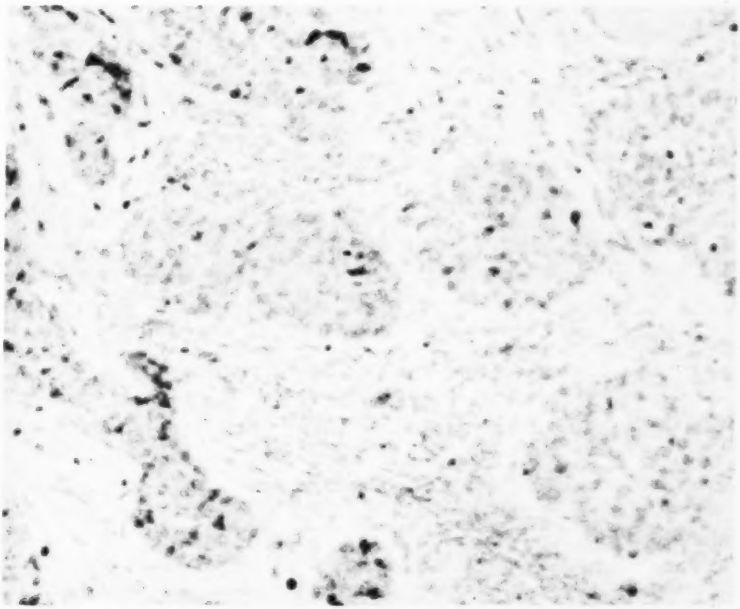

Figure 4. Photomicrograph of lung section showing primary carcinoma. (× 180)

As the third, fourth, and sixth nerves proceed toward their exit to the orbit, they are closely adjacent to the sella turcica. This lesion had extended laterally to involve these nerves on the left. No anatomic reason for the terminal palsy of the right sixth nerve was apparent at

autopsy. There was an intimate relationship of the tumor to the residual anterior lobe of the pituitary (fig. 5) which, although encroached upon by tumor, retained, as judged by the morphologic appearance, its viability. Invasion between the bundles of a left cranial nerve, probably the oculomotor, was histologically demonstrable (fig. 6).

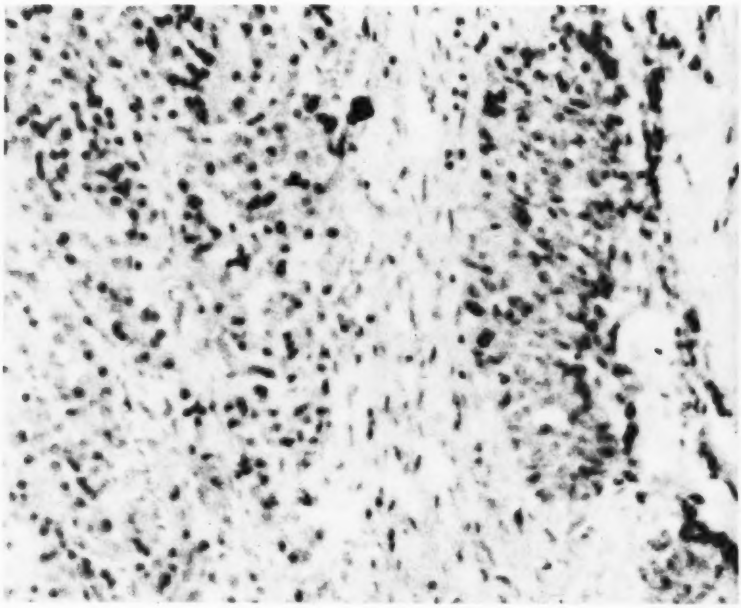

Figure 5. Photomicrograph showing metastatic carcinoma in close relationship to anterior lobe of pituitary (on left). (× 180)

The encroachment of the lesion upon the pituitary gland brings up the question of how much hypopituitarism is present. Clinically, perhaps, the extreme fatigability of which this patient complained may be related.

From the microscopic appearance, one would say that a degree of secondary hypofunction of thyroid, adrenals, and testes existed. The thyroid acini were normal size to small, the lining epithelium was very flat, and the colloid showed no scalloping and tended toward basophilia. All these, though not necessarily indicative, are usually found in hypothyroidism. It is of interest that, on the basis of the EKG, hypothroidism was suggested. The adrenal cortex was thin and made up chiefly of zona glomerulosa, with thin fasciculate and reticular zones. Increased numbers of eosinophils were present in the liver, spleen, and bone marrow, perhaps due to decreased adrenal cortical function. The testes showed absence of spermatogenesis and increased interstitial fibrous tissue, a step toward secondary atrophy.

Within the brain there were two hemorrhagic lesions within the cerebrum which appeared microscopically as hemorrhagic infarcts. The larger of the two was subjacent to the right cortical motor projection area and contained tumor tissue in the center (fig. 7). It would have been of interest to know if the epileptiform seizures were Jacksonian.

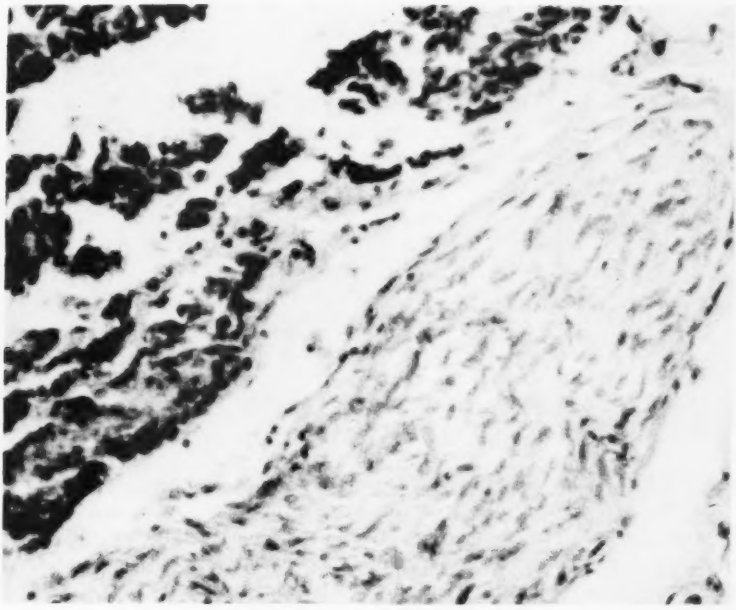

Figure 6. Photomicrograph showing invasion of tumor about fibers of the cranial nerve. (× 180)

A third lesion, 1 by 1 by 1.5 cm., was located in the anterior hypothalamus at the tuber cinereum. This lesion apparently compressed the rostral portion of the third ventricle, that is, the optic and infundibular recesses. It had not given rise to obstruction of the ventricular system sufficient to cause dilatation of the lateral ventricles. It was hemorrhagic, and composed of epidermoid carcinoma similar to that observed in the lung. The optic tracts were adjacent to tumor but no involvement of these by neoplasm was seen.

In this area are located nuclei which control water balance and the parasympathetic nervous system. It is of interest that the only two recorded urinary specific gravities were 1.003. Volume of urine output is unknown but no observation of polydipsia or polyuria was noted on the patient's chart. The stimulation of the parasympathetics may have been responsible for the bradycardia and postural hypotension.

Other symptoms usually associated with hypothalamic involvement, that is, sleep disorders and loss of body temperature control, were not present.

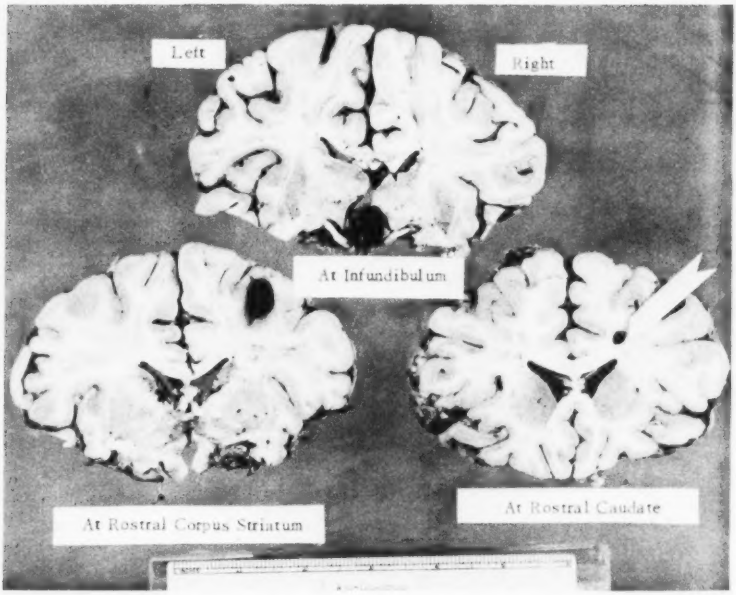

Figure 7. Gross delineation of the three metastases within the brain.

In respect to the long-standing history of emphysema, bullae were present in both lungs and it is likely that some degree of pulmonary hypertension existed, as attested to by subintimal hyalinization of small pulmonary arterioles and gross and histologic evidence of right ventricular hypertrophy.

Anatomic diagnosis:

Bronchogenic carcinoma, with metastases to pituitary and hypothalamus

Doctor Redfield:* This has been a most interesting and instructive case for everyone and the discussants have presented the material very well. I think one of the most important things for us to take away with us is that many of the central nervous system lesions are metastatic in the broad sense, that is, they are subsequent to or caused by affections, inflammatory or neoplastic, of other parts of the body. Even lesions resulting from trauma are frequently contrecoup. Also, the primary focus, inflammatory or neoplastic, most frequently is in the respiratory system. In the case of neoplasms, Kernohan and Sayre[2] stated: "Figures from various sources show an incidence of metastatic tumors ranging from less than three to almost 40 percent of all tumors found in the central nervous system." I think that the higher figure, 40 percent, is most nearly true in general hospitals. These authors quote Kiefer's[3] review

*Lt. Ernest S. Redfield (MC) USN, Assistant Pathologist, Pathology Service.

of 100 metastatic brain tumors from their laboratory in which he found that ". . . more than one third originated in the lungs, slightly less than one fourth arose in various segments of the gastrointestinal tract, while about one tenth originated in the breasts and a similar number took origin in the kidneys." In connection with our case, recent reports by different workers show that an appreciable number of patients, as much as 10 percent, with bronchogenic carcinoma, present themselves primarily with signs and symptoms of brain tumor.

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CORRECT USAGE PREFERRED

I have frequently read and heard the phrase "more preferred." Is this a misuse of words? The term *preference* is derived from two Latin words *prae* and *ferro,* and means literally to bear or place before (something else). Thus a student who goes to the movies before studying his lesson prefers, on that occasion at least, the show to his studies. There are no *degrees* of preference. *A* is before *B* or *B* is before *A,* not more or less before. If several objects are presented for choice the whole group can be arranged in a preferential sequence but still there are no degrees of preference.

Confusion comes from the fact that something does vary in degree. One object or response is more desirable, more pleasant, more acceptable, better liked, than another. There are degrees of desire, pleasantness, acceptability, appetite, liking, etc., but not degrees of preference.

—P. T. YOUNG
in *American Journal of Psychology*
p. 318, June 1955

CASE REPORTS

Alopecia Universalis in Cirrhosis

WILLARD R. WARREN, *Major, MC, USA*

ALTHOUGH some loss of hair is not uncommon in Laennec's cirrhosis, alopecia universalis is generally assumed to be rare. In spite of a report by Lloyd and Williams[1] that they found a 75 to 100 percent loss of body hair in 12 of 46 male patients with severe cirrhosis, standard textbooks of medicine[2] and diseases of the liver[3] do not mention alopecia universalis among the complications of cirrhosis. Similarly, dermatology texts[4] fail to incriminate cirrhosis as a possible cause. Recently an additional patient was observed who developed universal alopecia coincident with and possibly as a complication of Laennec's cirrhosis.

CASE REPORT

The patient, a 46-year-old white man, was admitted to the hospital on 3 October 1953 with the chief complaints of vomiting and diarrhea of 36 hours' duration. He had felt well until about 3 weeks before admission, when there was an onset of anorexia, lassitude, malaise, insomnia, and dark urine. On 2 October he developed nausea attended by frequent vomiting, and diarrhea characterized by about 10 loose, black stools daily. The next day he became jaundiced, and sought medical attention.

Past history revealed that the patient had had scarlet fever in 1924, dengue in 1942, malaria in 1943-1946, and pneumonia in 1949. He admitted to drinking "a good deal"—at least four highballs daily—and friends stated that he subsisted largely on alcohol. During the 10 months preceding his present admission to the hospital, all of the hair of his head, trunk, and limbs had gradually turned gray and then fallen out.

Physical examination revealed a well-developed, well-nourished man who appeared 20 years older than his stated age. The most striking finding was the total absence of all hair. Skin and sclerae were moderately icteric. Many telangiectases were noted on the head; mild palmar erythema was present, and there was a large spider angioma on the right wrist. The sides of the tongue were smooth and red. The liver was palpable 6 cm. below the right costal margin, and was tender. Cutaneous veins were prominent over the upper abdomen and the lower thorax. The testes were normal in size but distinctly soft. There was

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bilateral 2-plus pitting edema of the ankles. Deep reflexes were all hyperactive, and there was marked intention tremor of the hands.

Complete blood cell counts, urinalysis, serologic tests for syphilis, examination of stool specimens, roentgenogram of the chest, and an electrocardiogram revealed normal findings. The cephalin-cholesterol flocculation was 4 plus; thymol turbidity, 17.3 units; serum bilirubin, 6.1 mg. per 100 ml.; serum albumin, 1.73, and serum globulin, 4.78 grams per 100 ml. Prothrombin time was 32 percent of normal.

On admission a clinical diagnosis of cirrhosis of the liver was made and the patient was placed on the usual therapeutic regimen for that disease. In spite of intensive treatment, however, his condition deteriorated rapidly, and he developed progressive hepatic insufficiency and decompensation. He died in hepatic coma on 5 November 1953.

Necropsy findings. Necropsy disclosed the liver to be involved by far advanced Laennec's cirrhosis, displaying the classical "hobnail" morphology. Other findings were esophageal varices, acute esophagitis, multiple gastric ulcerations, splenomegaly, ascites, and total alopecia.

DISCUSSION

The appearance of alopecia universalis in the terminal stages of Laennec's cirrhosis[1] makes a causal relationship between the two seem possible and even probable, particularly in view of the known propensity of cirrhosis to produce diminution of body hair. It is of interest that alopecia was ostensibly the presenting symptom of cirrhosis in this patient.

The mechanism by which cirrhosis could give rise to universal alopecia is not entirely clear. The estrogen retention which frequently complicates cirrhosis is thought to be the cause of the hair loss that is occasionally seen, through the agency of pituitary-mediated suppression of testicular function.[5] In males without liver damage, however, massive doses of estrogens do not produce total alopecia, and neither does postpuberal castration lead to universal (or even pronounced) loss of hair.[5] Moreover, the alopecia seen in hypogonadism usually does not involve the scalp.[6] Some factor in addition to estrogen retention and gonadal suppression must therefore have contributed to the cause of the universal alopecia seen in this patient. Lack of certain members of the B complex of vitamins can cause abnormalities of the skin and hair, and the vitamin B deficiency which was undoubtedly present in this patient may have predisposed to a total alopecia. In addition, one or several of the toxic metabolites that accumulate in the body as a result of severe hepatic insufficiency may be detrimental to the hair follicle. Other occasional causes of symptomatic alopecia (*e. g.*, hypopituitarism, myxedema, advanced malnutrition) were not present in this patient.

SUMMARY AND CONCLUSIONS

A case of classical Laennec's cirrhosis accompanied by alopecia universalis was presented. The cause of the loss of hair was thought to be estrogen retention with attendant gonadal suppression, in combination with other unknown factors—possibly vitamin B deficiency or endogenous intoxication. Cirrhosis should probably be added to the list of possible causes of symptomatic alopecia universalis.

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MANAGEMENT OF RH-NEGATIVE PATIENT

Until some proved method is found of preventing the development of congenital hemolytic disease during the prenatal period, it is evident that during this period Rh-negative mothers should have continuous observation and repeated reassurance. As a rule, they can be allowed to go into spontaneous labor at term. A Coombs' test should be taken from the blood of all infants born of Rh-negative mothers who show isoimmunization. Immediate replacement transfusion offers a high salvage rate for those infants who show a positive Coombs' test except in case of hydrops. The initial hysteria and fear aroused in the minds of obstetricians and Rh-negative obstetrical patients during the past decade should be allayed.

—E. L. R. SCHRAM, M. D.
in *American Journal of Obstetrics and Gynecology*, pp. 251-252, Feb. 1954

Extensive Rectal Carcinoma With Pelvic Evisceration and Uretero-Ileostomy

JAMES M. STOKES, *Captain, MC, USA*
PHILIP A. BERGMAN, *Lieutenant Colonel, MC, USA*

MANAGEMENT of extensive carcinoma of the rectum, including resection of adjacent viscera, is a problem which has confronted surgeons with increasing frequency since the development of adequate supportive therapy and current surgical technic in the surgery of cancer. This case report of an extensive carcinoma of the rectum in a young man is of interest from the standpoint of the unusual size of the tumor and as an example of a method in management of the urinary tract following cystectomy as a part of pelvic evisceration.

CASE REPORT

A 26-year-old man was admitted to an Army hospital in Europe in December 1954 and transferred to this hospital on 28 December. He had noted abdominal discomfort, increasing frequency of bowel movements, and weight loss over a period of 9 months.

The patient appeared to be acutely ill. Physical examination revealed moderate abdominal distention and evidence of marked weight loss. A large circumferential exophytic carcinoma of the rectum was present about 5 cm. from the anus. The tumor overlay the left lobe of the prostate and almost completely obstructed the bowel lumen. A biopsy of the lesion confirmed the diagnosis of cancer. On 30 December a proximal transverse colostomy was performed for relief of obstruction. Following this, the patient improved considerably with supportive therapy, including whole blood transfusions; nevertheless, he continued to have marked discomfort because of pain and tenesmus from the large pelvic mass, and because of discharge of necrotic tumor tissue through the rectum. Intravenous pyelograms revealed a normal functioning urinary system. On cystoscopic examination the left half of the trigonal area was found to be markedly elevated and distorted. No definite gross invasion of the bladder mucosa was observed. The patient had difficulty in voluntary urination, necessitating continuous Foley catheter drainage. There was no clinical or laboratory evidence of distant metastases.

On 14 January 1955 an exploratory laparotomy was performed. The liver and peritoneal cavity were free of apparent metastases. The tumor

From Army and Navy Hospital, Hot Springs, Ark. Capt. Stokes is now assigned to U. S. Army Hospital, Fort Hood, Tex.

completely filled the pelvis, elevating the bladder and other viscera out of the true pelvis. The regional nodes and the periaortic nodes were markedly enlarged above the level of the inferior mesenteric artery. Because of the size of the carcinoma and its fixation to the prostate and base of the bladder, it was believed that any attempt at local excision would be futile as a definitive procedure for curing the patient. A modified pelvic evisceration was carried out in the manner reported by Bricker and Modlin,[1] removing the rectum, sigmoid, bladder, prostate, and regional nodes as an abdominoperineal procedure. Node resection was carried as high as the level of the duodenum. The internal (hypogastric) and external iliac nodes were resected with the specimen, exposing the internal iliac vessels without resecting them.[2] The hypogastric arteries were ligated in continuity, and the middle hemorrhoidal vessels were divided at their origin. Perineal resection, although difficult, was carried as far lateral as possible.

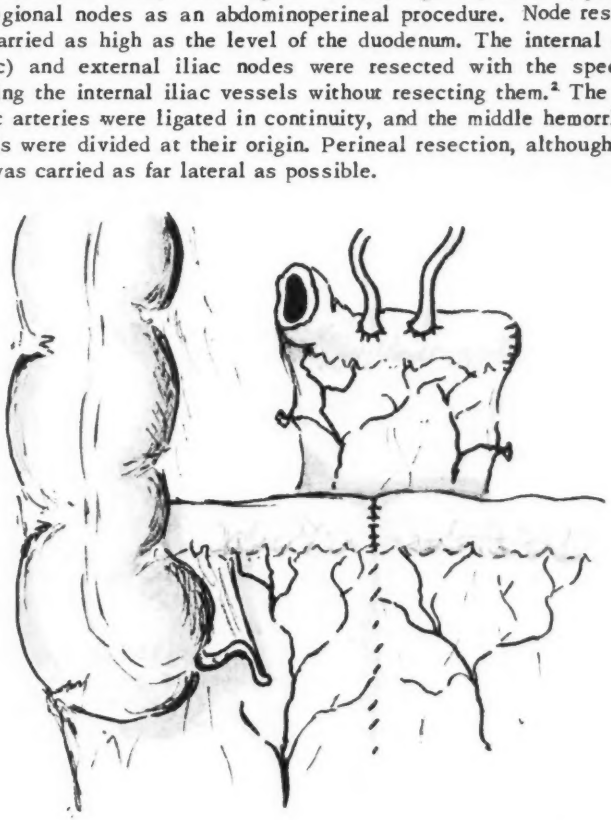

Figure 1. Entero-enterostomy of ileum showing the uretero-ileostomy in the isolated segment of ileum.

The ureters were divided about 1 inch beyond the common iliac artery. Care was taken to preserve the blood supply of the distal portion of the ureter. The ureters were then anastomosed with interrupted 0000 chromic gut on an atraumatic needle to the isolated segment of ileum, about 5 inches from the ileocecal junction in the technic described by Cordonnier,[3] suturing mucosa of ileum to ureter. A few sutures were

placed between the adventitia of the ureter and the serosa of the ileum. Because of the absence of dilatation of the ureter, few sutures were required to obtain a satisfactory anastomosis. The mobility of the isolated ileal segment was advantageous in preventing tension on the anastomosis. The distal end of the ileal segment was used as an ileostomy for the urinary outlet. The relationship of the isolated segment and uretero-ileostomy is represented in figure 1. Sigmoid colostomy was performed on the left side. The patient had an uneventful postoperative course with the exception of an episode of homologous serum jaundice occurring about 8 weeks after operation. A mild episode of pyelitis was controlled with antibiotics. Postoperatively the patient gained 25 pounds and managed his ileostomy without difficulty. Intravenous pyelograms were normal at the time of his discharge from the hospital.

COMMENT

The unfixed specimen revealed the longitudinal extent of the tumor to be 15 cm. with the distal margin 4.5 cm. from the anorectal junction. The tumor measured 15 by 10 by 13 cm. Figure 2 reveals the extent of the carcinoma grossly in the fixed specimen.

Figure 2. Posterior view of operative specimen (fixed).

Cross sections indicate the proximity to prostate seminal vesicles and bladder (fig. 3). The danger of attempting to dissect the tumor from these organs without inclusion of adjacent viscera was apparent from microscopic examination of a section through the adherent areas. Sections of 27 grossly enlarged lymph nodes did not show metastases. The carcinoma was moderately differentiated, and there was evidence of marked inflammatory change throughout all layers of the rectum and pelvic tissue. The inflammation undoubtedly explained the patient's marked tenesmus and pain.

Figure 3. Cross section of gross specimen showing carcinoma of rectum in upper part and bladder below.

The occurrence of a carcinoma of this size with fixation anteriorly presented a problem of management of the ureters following exenteration of the pelvic viscera. An isolated segment of ileum functioning as an ileostomy as developed by Bricker,[1,4,5] was used in this patient; this method offers the advantage of separation of the urinary and fecal contents (fig. 4). A follow-up of his series reported through 3 years has shown no evidence of hyperchloremic acidosis.[6,7] From the standpoint of the patient, avoidance of a wet colostomy also seems highly desirable. The use of an isolated segment of sigmoid colon in a similar manner has been reported. In suitable cases this method obviates the

entero-enterostomy because the distal colon is brought out as a colostomy.

Figure 4. Detail of positions of ileostomy (on the right) and colostomy (on the left).

SUMMARY

The occurrence of an unusually large carcinoma of the rectum in a young man is reported. Fixation of the carcinoma to the adjacent base of the bladder and prostate necessitated pelvic evisceration. The method of management of the urinary stream, using an isolated ileal segment as described by Bricker, provided satisfactory results in this patient.

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Amyoplasia Congenita

Report of a Case

LAWRENCE H. GOLDEN, *Captain, USAF (MC)*
GEORGE D. WEICKHARDT, *Major, USAF (MC)*

AMYOPLASIA CONGENITA is a rare multiple developmental articular rigidity which produces fixation of joints similar to that seen in fibrous ankylosis, but in which there is no clinical or laboratory evidence to suggest an inflammatory process. The term, multiple congenital articular rigidity, used by Sheldon[1] describes the clinical picture of the disease but gives no clue as to the cause.

According to Brandt[2] other anatomic abnormalities which may occur in these patients are: subluxation of hips, elbows, knees, and thumbs; shortened neck; torticollis; kyphosis; scoliosis; digit webbing; polydactylia; hernia; genital deformities; and hydrocephalus.

In a recent article by Lemmon and Vail[3] this unusual clinical entity was fully described. Their review of available literature indicated the infrequency of case reports. We are presenting an additional case to illustrate a form of the disease which may suggest progressive features in respect to the muscular changes present.

CASE REPORT

A 24-year-old officer was admitted to this hospital on 19 March 1955. He thought that he was developing "muscular dystrophy" and was referred to us for this reason. The patient stated that he had had curvature of the fingers of both hands since childhood. He was certain that this curvature was present when he was 11 years old. In November 1952, when the patient developed an upper respiratory infection, a physician expressed some interest in the deformity. A year later when the patient entered military service, the condition was recorded and was believed to be without clinical significance. Muscular atrophy in the interosseous spaces had evidently been present for many years. In October 1954, the patient believed that the muscles of the right thumb were becoming atrophied. At no time did he experience any pain or other sensory disturbance.

From U. S. Air Force Hospital, Sampson Air Force Base, N. Y.

A history of familial diseases of the nervous or musculoskeletal systems was not elicited.

Physical examination was negative except for the inflexibility of the hands (fig. 1). All fingers were partially flexed at the interphalangeal joints and could not be fully extended with the exception of each thumb. There was some limitation of motion involving the abduction of the fingers. The latter seemed related to muscular weakness. Another finding of note was the atrophy of the interosseous and thenar muscles on both hands—more marked on the right than on the left. Neither fasciculations nor sensory abnormalities were detected.

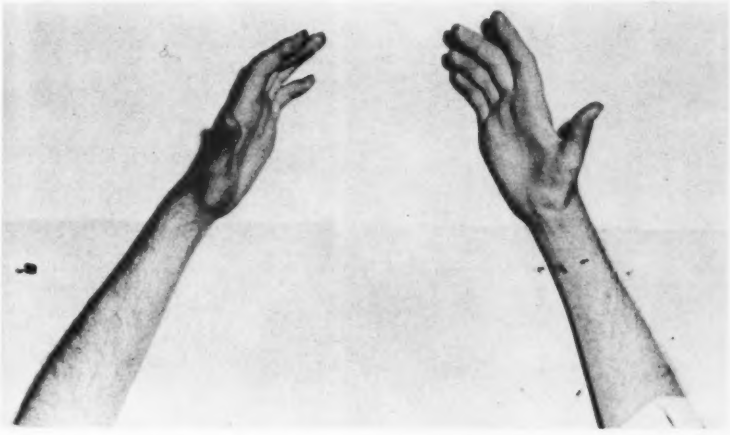

Figure 1. Photograph of hands showing muscular atrophy and fingers fully extended.

Blood serologic tests for syphilis were negative. Spinal fluid pressure was 130 mm. of water. The Queckenstedt test gave normal results. Examination of the spinal fluid showed 2 lymphocytes per cu. mm. and the total protein was 25 mg. per 100 ml. Serologic tests of the spinal fluid for syphilis were negative, and the gold curve was normal. The routine blood count and urinalysis showed no significant abnormality. The blood sugar and nonprotein nitrogen levels were normal. The blood calcium was 10 mg. per 100 ml.; phosphorus, 4.67 mg. per 100 ml.; and alkaline phosphatase, 3.1 units per 100 ml. (Bodansky). Roentgenograms of the hands showed minimal osteoporosis without ankylosis (fig. 2), and roentgenograms of the skull, chest, and entire spine showed no significant abnormalities.

According to the literature, the cause of this disturbance is not clear. Sheldon[1] suggested a primary aplasia or hypoplasia of certain muscle groups as the initial lesion while Brandt[2] thought that it was a neurologic disease related to the group of progressive muscular atrophies.

Extensive pathologic study has been wanting because of the rarity of the disease. Brandt reported on a biopsy of the quadriceps muscle which showed increased interfascicular connective tissue and atrophy of muscle cells together with degenerative changes in the anterior horn cells of the spinal cord.

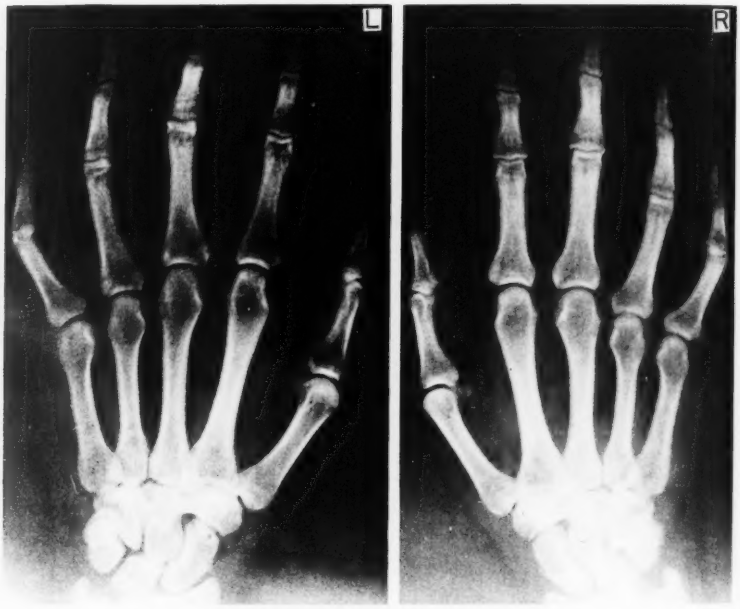

Figure 2. Roentgenograms of the hands.

SUMMARY

A patient with amyoplasia congenita, a rare multiple developmental articular rigidity, is reported. The clinical picture was characterized by curvature of the fingers of both hands existing since early childhood, muscular atrophy of the interosseous spaces, the absence of sensory disturbances, and a negative familial history. Because of the localization to the hands and absence of other lesions it was thought to be benign, although rather recent changes in the musculature about the involved joints raised the question of progression.

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Scleroma in the United States

Report of a Case in a Native

BYRON G. McKIBBEN, *Colonel, MC, USA*
MILWARD W. BAYLISS, *Colonel, MC, USA*

SCLEROMA was first described in 1870 as a hard, painless, proliferating, tumorlike disease of the nose, extending to the skin of the lip and into the nasopharynx. Because of the hard consistency and original location in the nose, Hebra and Kaposi gave it the name rhinoscleroma.[1]

It later became evident that the scleromatous process may occur anywhere in the respiratory tract, from the nose to the bronchi, and that in many cases the nose is not involved at all.[2] At the Second International Congress of Otolaryngology in Madrid, in 1932, the more inclusive term scleroma was therefore unanimously adopted.[3] Kouwenaar[2] has suggested the term respiratory scleroma.

Scleroma is a world-wide disease with its principal focus in eastern Europe. Although increasing in the countries of the Western Hemisphere, especially in those of Central and South America, it is still rare in the United States.[4]

In 1893, Jackson[5] reported a case of rhinoscleroma in an immigrant from Hungary. While the diagnosis was not confirmed by histologic examination, this report was the first scientific paper on scleroma to be published in the United States.

In 1896, Wende[4] reported a case of rhinoscleroma in a boy whose birthplace was Buffalo, N. Y. Histologic examination was suggestive of scleroma, but it was difficult to demonstrate the presence of the Frisch bacilli in the cells. An organism not unlike the bacillus of Friedländer was isolated on culture.[6] While this diagnosis was not definitely confirmed by laboratory methods, this represents the first case of scleroma in a native of the United States recorded in medical literature.

The first case of scleroma definitely confirmed by histologic examination and culture was reported by Freeman in 1900.[7] The patient was an immigrant from Russia.

In 1921, Watkins[8] presented a case of scleroma in a native of Maryland. This patient had visited the West Indies and Central

From Letterman Army Hospital, San Francisco, Calif. Col. McKibben is now assigned to Tokyo Army Hospital, APO 500, San Francisco, Calif.

American countries, where he went as a fireman on a ship. This was the first case in a native of the United States in which the diagnosis was unquestionably confirmed by histologic examination. The tissue for this examination was removed from the larynx at autopsy. Unfortunately, culture was not done in this case.

In 1942, Cunning and Guerry[4] made a careful review of the literature and listed 103 cases of scleroma in the United States and Canada (the exact number in each of these two countries was not stated). Seventeen of the patients were native-born, an observation confirmed by Cunning.[9] Represented in this series of 103 cases are a number of cases, apparently not elsewhere recorded, that were compiled from answers to questionnaires sent to otolaryngologists in the United States. One of these patients, treated by Tarrell in 1890, was a native of New York.[4] We are unable to determine if the diagnosis was confirmed by biopsy and culture.

As previously noted,[1,5,6] the diagnosis was not definitely established in some of the cases listed by Cunning and Guerry. In two of these, where biopsy specimens had been obtained, there was controversy as to whether the pathologic diagnosis was scleroma or sarcoma.[10,11]

We made a careful review of the literature from 1941 to the end of 1954 and found an additional 19 cases among immigrants, 22 among natives, and 1 in which the records of the patient's nativity, age, and sex had been lost. Included in this group are Wexler's[12] cases, additional details of which are listed in table 1.

TABLE 1. *Seven cases of scleroma, found by positive culture and biopsy on 27 patients with atrophic rhinitis*[30]

Case	Patient	Age	Birthplace
1.	Mexican man	22	California
2.	Mexican woman	28	California
3.	Mexican man	19	Colorado
4.	Man	55	Iowa
5.	Woman	44	Germany
6.	Mexican man	27	Mexico
7.	Details not known —records mislaid	-	—

This makes a total of 145 patients by the end of 1954. Thirty-nine of these were native-born. Our patient, a native of Arizona, brings the total to 146 at the time of this writing (table 2).

This, of course, does not represent all of the cases that have occurred in the United States. Godwin[13] observed about 12 cases

at the Harbor General Hospital in Torrance, Calif. With the exception of one—a Ute Indian woman who had lived in New Mexico—these patients were members of two Mexican families. They ranged in age from 7 to 60 years, and the adult members were born in Mexico.

TABLE 2. *Patients with scleroma in the United States*

Date reported	Author	Foreign-born	Native-born	Birthplace unknown
1941	Goldstein[31]	1		
1942	Cunning and Guerry[4]	86	17	
1942	Dixon[32]	1		
1943	Kellert[33]	1		
1943	Dill[34]	1		
1947	Cunning[35]		1	
1947	Hara and associates[22]		7	
1948	Miller, C. K.[36]		1	
1948	Putney[37]	1		
1948	New and associates[23]	1		
1949	Wexler[12]	2	4	1
1949	Kline and Brody[38]		1	
1949	Som and Jaffin[24]	1		
1949	Miller, A. H.[39]	1	2	
1950	Olson[40]	2	1	
1950	Morwitz and Horwitz[25]	1		
1951	Eisenstodt[41]	1		
1952	Titche[26]		1	
1952	Russell and associates[27]		1	
1953	Hoover and King[42]	1		
1953	Holinger and associates[43]	3		
1953	Dwyer[44]		1	
1954	Hollender and Scheer[45]		2	
1954	Folbre and associates[28]	1		
1955	McKibben and Bayliss*		1	
	Total	105	40	1

*Case presented herein.

A definite diagnosis of scleroma is best made by examination of a biopsy specimen. Histologically the lesion is a granulomatous type of chronic inflammation associated with fibrosis. The cellular infiltrate is composed mainly of plasma cells and lymphocytes. Scattered throughout this infiltrate are three characteristic types of cells. The first type is the Russell body, which is a rounded, homogeneous, eosinophilic cell sometimes containing an eccentric pyknotic nucleus. These bodies apparently represent degenerated plasma cells, are nonspecific, and occur in various inflammatory lesions. The second variety is the Mikulicz cell, which is large (39 to 50 μ in diameter), with an abundant foamy pale cytoplasm and a relatively small nucleus. The Mikulicz cells are characteristic of scleroma and are usually present in

the greatest numbers near the surface of the lesion, either singly or in clusters. The third characteristic is the Frisch bacillus. This bacterium, *Klebsiella rhinoscleromatis,* is found in large numbers within the cytoplasm of the Mikulicz cells as well as in interstitial spaces. The foamy appearance of the Mikulicz cells is probably due to the abundant capsular material of this bacterium. The presence of Russell bodies, Mikulicz cells, and Frisch bacilli establishes the diagnosis of scleroma.[2]

Isolation of *K. rhinoscleromatis* from secretions from the nose and throat or from biopsied tissue is an aid in confirming the diagnosis of scleroma.[14-16] These gram-negative encapsulated rod bacteria are easily cultured on eosinmethylene blue agar, blood agar, or plain agar. On these media are produced large, translucent, mucoid, coalescing colonies.

Kauffmann[17] has demonstrated that the Klebsiella bacteria isolated from patients with rhinoscleroma are antigenically and biochemically homogenous and has characterized the species on the basis of their inability to split dulcitol, urea, and the organic derivatives d-tartrate, citrate, and mucate; as well as a negative Voges-Proskauer reaction. Final identification of the species *K. rhinoscleromatis* is based on the presence of somatic smooth "O" antigen 2 and capsular "K" antigen 3.

Although the role of *K. rhinoscleromatis* as the causative agent of scleroma has been doubted by numerous authors,[18-20] the constant presence of this organism in scleromatous tissue and its frequent presence in the nasal secretions of persons with scleroma and of their contacts, along with its relative absence otherwise, lead one to believe that it is a causative factor. Although the third postulate of Koch, the production of the disease by inoculation of the Klebsiella bacteria, has not been accomplished, there is otherwise little doubt that this organism is the causative agent of the disease. Recent evidence that the disease responds favorably to antibiotics to which *K. rhinoscleromatis* is sensitive[21-29] further substantiates the evidence that this organism is the causative agent, or at least a factor in the prolongation of the disease.

Schindler[21] treated five patients with rhinoscleroma in his private practice. Two of these were natives of the United States and the other three were foreign-born; one from Pakistan, one from San Salvador, and one from Nicaragua. *K. rhinoscleromatis* was identified by culture in all five cases. A biopsy specimen was obtained from one patient and it showed the characteristic histologic changes of scleroma. All of Schindler's cases responded favorably to treatment with terramycin (brand of oxytetracycline). While Wexler's[12] series is small, the finding of seven cases of scleroma among 27 patients with atrophic rhinitis sug-

gests that a substantial proportion of all patients in whom a diagnosis of atrophic rhinitis has been made may actually be suffering from early scleroma.

CASE REPORT

A 21-year-old Mexican, with a 4-year history of nasal obstruction, hoarseness, and dyspnea, was drafted into the Army on 4 March 1953. He was a native of Arizona and had not left the state until he entered the military service.

On 7 May 1953, he was admitted to a U. S. Army hospital. A diagnosis of "papillomatouslike" lesion of the larynx was made and he was transferred to this hospital.

The history disclosed that for many years he had been bothered with a thick, yellow nasal discharge and postnasal drainage. Dyspnea on exertion had been increasing, and the only relief from this was to decrease his activity. He believed that the shortness of breath was due to some obstruction in his throat, interfering with the air getting down into his lungs. Hoarseness, which had been present for a period of 4 years, had become worse during the last year. He was awakened every night by the presence of thick, tenacious mucus in the throat. Coughing to remove the mucus, which at times was bloody, caused some shortness of breath.

One of his sisters had similar symptoms. Five sisters, four brothers, and his parents were in good health.

On examination both nasal passages were found to be partially obstructed by crusts and yellow, purulent exudate, beneath which were granulomatous masses that bled easily. A similar condition was present in the nasopharynx. On indirect laryngoscopic examination, nodular masses were seen on the epiglottis, both ventricular bands, both vocal cords, and in the subglottic region. The glottic aperture was markedly decreased, and there was an inspiratory wheeze. The remainder of the physical examination was within normal limits.

Roentgenographic examination demonstrated soft-tissue masses in the larynx and superior portion of the trachea, with marked narrowing of the airway at the level of the cricoid cartilage (fig. 1).

Biopsy specimens were removed from the left nasal fossa on 14 May 1953 and from the left arytenoid area on 18 May 1953. Both specimens revealed similar pathologic pictures. The biopsied tissue consisted of irregular gray-white fragments. Microscopic sections were covered with stratified squamous epithelium, beneath which was a stroma composed of loose connective tissue, containing numerous small blood vessels, and densely infiltrated with inflammatory cells. These were chiefly plasmocytes with lesser numbers of lymphocytes and occasional eosinophils, neutrophils, and macrophages. Distributed throughout the stroma were large, oval to round Mikulicz cells, usually with a

small nucleus and numerous closely packed cytoplasmic vacuoles, giving the cytoplasm a foamy appearance (fig. 2). Many of these cells,

Figure 1. Roentgenogram showing soft-tissue masses in the larynx and trachea. Note stenosis at the level of the intervertebral disk between C-6 and C-7, and small nodular masses just above the clavicle.

especially around the periphery, contained the encapsulated bacilli *K. rhinoscleromatis* (fig. 3). These organisms were also noted in macrophages. Scattered throughout the inflammatory tissues were large, deeply eosinophilic round cells (Russell bodies) which appeared to be undergoing hyalinization (fig. 4). Many narrow bands of collagenous connective tissue were spread throughout the lesion. The diagnosis was scleroma of the nose and larynx.

Cultures of purulent nasal secretions on blood agar plates revealed small numbers of *Corynebacterium xerose* and nonhemolytic streptococci. However, the predominant organism on this medium consisted of a gram-negative encapsulated rod and practically pure cultures were obtained on eosinmethylene blue agar. Agglutination reactions identified the organism as Klebsiella type 3 *(K. rhinoscleromatis).* Cultures from scleromatous tissue from the same patient consisted entirely of this same Klebsiella organism. Antibiotic sensitivity tests performed

by the disk method on blood agar plates gave the results listed in table 3.

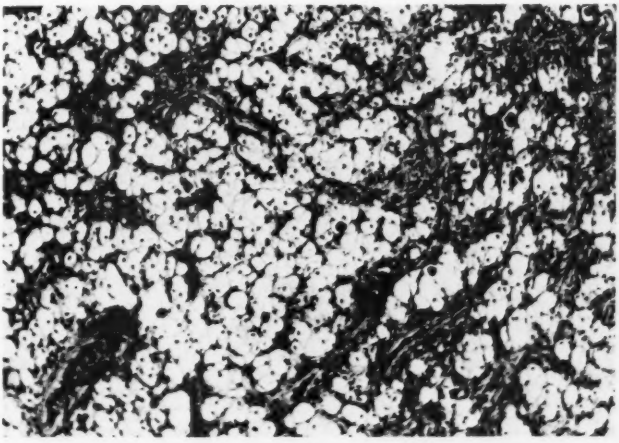

Figure 2. Mikulicz cells are the large pale cells with small nuclei and foamy cytoplasm. Scattered irregularly among these are bands of fibrous tissue in which are small numbers of lymphocytes and plasma cells. Several prominent dark-staining Russell bodies are also visible. (Hematoxylin and eosin stain, × 300)

Figure 3. Frisch bacilli (K. rhinoscleromatis) *stained with Warthin-Starry silver impregnation are numerous in the lower half of the Mikulicz cell. Note the capsule surrounding dark staining organisms. (× 4500)*

Initially, 250 mg. of terramycin 4 times daily was prescribed. Six days later, when the organism was identified and sensitivity tests completed, the medication was changed to aureomycin, in the same dosage.

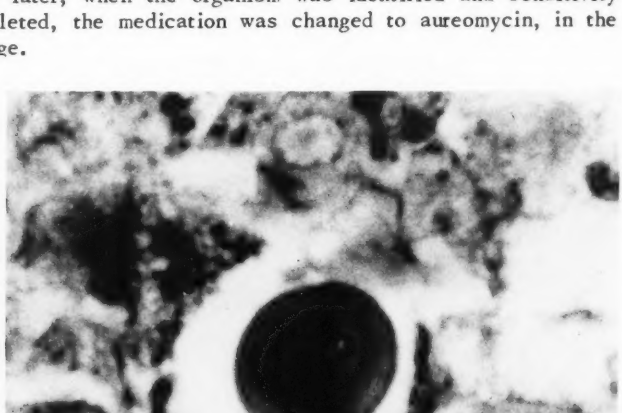

Figure 4. The Russell body is the dense, spherical, acidophilic mass, which according to some authors represents an altered plasma cell. (Hematoxylin and eosin stain, × 4500)

TABLE 3. *Sensitivity of* K. rhinoscleromatis *to six antibiotics (disk method)*

Antibiotic	Sensitivity reactions		
	1	2	3
Terramycin	10 mcg. −	30 mcg. −	60 mcg. +
Chloramphenicol	10 mcg. +	30 mcg. +	60 mcg. +
Polymyxin	5 mcg. +	10 mcg. +	30 mcg. +
Aureomycin	10 mcg. +	30 mcg. +	60 mcg. +
Dihydrostreptomycin	1 mcg. −	10 mcg. +	100 mcg. +
Bacitracin	2 units −	10 units −	20 units −

Within 3 weeks from the time treatment was started, the wheezing had stopped, hoarseness was less noticeable, and the lesions in the nose and larynx showed marked improvement. The patient was discharged from the Army on 19 June 1953, and was given enough aureomycin for one more week's treatment. The total time of treatment was one month.

The patient's reply to a follow-up letter 19 months later revealed that he was feeling as well as when he left the service. He further stated that he had not consulted a private physician.

COMMENT

It is interesting to note that this patient responded rapidly to treatment with aureomycin. Botros and associates[29] treated 14 patients with terramycin, aureomycin, or streptomycin and commented that "aureomycin appears more rapid in action on laryngoscleroma than other antibiotics." However, only one of their 14 patients was treated with aureomycin.

SUMMARY

A review of the literature on scleroma shows an increasing number of cases being diagnosed in the Western Hemisphere.

Originally considered to be a disease of the nose, the most recent opinions hold scleroma to be a disease which may involve any part of the respiratory tract. Diagnosis is best made by examination of a biopsy specimen, which will reveal three characteristic types of cells: the Russell body, the Mikulicz cell, and the bacterium *K. rhinoscleromatis* (Frisch bacillus).

Diagnosis of a case of scleroma in a native of Arizona was confirmed by histologic examination, which revealed the typical cells. The patient responded favorably to treatment with aureomycin; his symptoms were relieved, and the lesions in the respiratory tract regressed.

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Hemorrhoids and Anal Fistula in Infants and Children

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DONALD CAMPBELL, *Lieutenant Colonel, MC, USA*

ANORECTAL diseases, excluding congenital anomalies, are uncommon in infants and children. Although rectal prolapse, polyps, anal fissure, and proctitis are occasionally encountered, hemorrhoids and anal fistula are extremely rare in patients under the age of 12 years.

That hemorrhoids occur in infants or young children has been a subject of debate for many years. As early as 1866 Gosselin[1] remarked, "I have found in some works indications of hemorrhoids in children, but the details are too meager to assure oneself that something else was not the matter; *e. g.*, rectal polypus. We must not forget, in fact, that up to our own day, men have admitted the existence of hemorrhoids without making local examination, and simply because there was present either bleeding from the anus, or pain during defecation. I will believe in hemorrhoids in children when I shall have seen them, or when a serious observer, after a careful examination, shall have affirmed that he has seen them."[1] In 1873, when Bouchut[2] was asked if hemorrhoids occurred in young children, he answered, "No. . . . Children do not have hemorrhoids any more than they have varicose veins. For the past 20 years children have been brought to me who were said to have hemorrhoids, because of bleeding after defecation, or because of a small anal tumor. All of these cases were errors in diagnosis. . . . Up to 12 or 13 years of age, I know of no authentic observation of hemorrhoids; and I believe that cases of this nature are all to be referred to rectal polypi."[2]

While the above statements are obviously not acceptable today, they are, nevertheless, of historical interest and indicative of the rarity of this condition. Modern texts on pediatrics and proctology teach that hemorrhoids are seldom found in infants and children. Bacon[3] stated that "the condition in infancy would constitute a medical anomaly," yet he referred to 3,700 cases of hemorrhoids tabulated by Smith,[4] of which 26 were found in children under the age of 9 years. There is little in the recent American literature on this subject. Schapiro,[5] in evaluating 2,700 pediatric proctologic conditions, found 25 cases of hemorrhoids, 5 of which occurred in

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newborn infants, 11 in infants, and 9 in children. He believed that the occurrence of internal hemorrhoids in children might still be seriously questioned, because in early life the middle and inferior hemorrhoidal veins have competent valves.

Fistula in ano, perhaps not as unusual as hemorrhoids, is also rare in children. Holt and Howland[6] stated that ischiorectal abscess is not a rare condition even in infancy, but that fistula, as a sequela of incision and drainage, is most infrequent. Bacon reported a series of 3,100 fistulas and abscesses, of which only 39 occurred in infants. In a series of 1,801 anal fistulas Buie[7] found only 9 in infants. In Schapiro's report there were only 20 fistulas. Venturo[8] reported 300 abscesses and fistulas, which included only 7 fistulas in infants. These figures would indicate that about 1 percent of all fistulas occur in infants, and that fistulas constitute about 1 percent of all pediatric proctologic diseases.

In the past year at this hospital, we have had the opportunity of treating a 4-year-old child with bleeding hemorrhoids and a 4½-month-old infant with a fistula in ano. The rarity of these two conditions in infancy and childhood has prompted us to submit these case reports.

CASE REPORTS

Case 1. A 4-year-old white child was admitted to the hospital in June 1954 because of profuse rectal bleeding following passage of a hard stool. Past history revealed that she had had trouble with constipation since birth and had passed small amounts of bright red blood intermittently with stools since she was 12 days old. When she had been an infant, her mother had noted a gradually increasing protrusion at the anus, and when the child was 19 months old incision and evacuation of an external thrombotic hemorrhoid had been performed. Attempts to regulate her bowel habits with mineral oil met with only partial success, and constipation with intermittent bleeding persisted. In recent months, the mother again noted enlarging, irregular protrusions at the anus. On the morning of admission, after passing a constipated stool, the child had a severe rectal hemorrhage.

Examination revealed a pale, 4-year-old girl who appeared to be normally developed. The liver and spleen were not palpable and there was no evidence of portal hypertension. Visual examination of the anus revealed a rosette of large hemorrhoidal masses protruding from the anus (fig. 1). No other abnormalities were found. Initial laboratory studies were as follows: Red blood cell count, 3,150,000 per cu. mm.; hemoglobin, 6.1 grams per 100 ml.; morphologic red cell findings, normal; white blood cell count, 5,350 per cu. mm.; bleeding time, 2 minutes; coagulation time, 4 minutes; platelet count, 158,000; cephalin-cholesterol flocculation (24 and 48 hours), negative; serum bilirubin, 0.70 mg. per 100 ml.

Findings of a urinalysis and of a roentgenogram of the chest were normal.

A blood transfusion of 300 ml. was given and the patient carefully observed. No further hemorrhage occurred, but a small amount of blood mixed with each stool continued to appear. Iron preparations were administered orally and the hemoglobin gradually rose to 10.6 grams while the red blood cell count increased to 5,140,000 per cu. mm. An esophagram and upper gastrointestinal and barium enema studies were normal.

Figure 1 (case 1). Photograph of large protapsing hemorrhoids in a 4-year-old child.

Proctosigmoidoscopic examination was performed under general anesthesia; no abnormalities other than the large internal-external hemorrhoids were noted. Because bleeding had practically ceased in this young patient, operation was withheld and she was discharged from the hospital on the 10th day following admission. Feosol (brand of ferrous sulfate) and petrogalar (brand of aqueous suspension of 65 percent mineral oil) were prescribed.

Four weeks later, rectal bleeding again increased in spite of improved bowel habits. Laboratory determination revealed that the hemoglobin had fallen to 9.5 grams per 100 ml. and the red blood cell count to 3,840,000 per cu. mm. Examination revealed no essential changes. Hemorrhoidectomy was advised. On 16 August 1954, hemorrhoidectomy was performed. Four large, combined hemorrhoidal masses were excised. The microscopic pathologic report confirmed the fact that these were hemorrhoids. The postoperative course was satisfactory, with only mild bleeding at stool during the first few days. The patient was improving steadily at the time of her discharge on the 11th postoperative day.

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Discussion. The cause of hemorrhoids is not definitely established. The most acceptable theories are that they arise secondary to anal infection and constipation, portal hypertension, constitutional diseases, severe diarrhea, and straining. Of these, straining due to constipation is undoubtedly the most common cause of hemorrhoids in children. It is certainly the most plausible explanation for the hemorrhoids in this patient, who had been affected with constipation since infancy, and at 19 months of age had developed an acute, thrombotic external hemorrhoid. A thorough investigation had revealed no other cause for hemorrhoids.

Ordinarily, small hemorrhoids in young infants and children may be treated conservatively. If the cause of the straining—such as constipation, crying, coughing, and diarrhea—can be alleviated, the hemorrhoids will usually subside. In our case, the constipation responded poorly to treatment, and bleeding became severe. Hemorrhoidectomy was considered necessary. The patient has now been followed for almost 1 year and there has been no further bleeding. Examination reveals no evidence of recurrent or residual hemorrhoids, and the anorectal canal appears normal. The hemoglobin and red blood cell count remain normal. The result was gratifying.

Case 2. A 4½-month-old white boy was hospitalized in November 1954 for correction of a chronically draining perianal opening. Past history revealed a normal, full-term delivery and average neonatal development. Dietary and bowel habits were not unusual. There was no history of rectal trauma or exposure to tuberculosis. When the child was 3 months old, a small, tender swelling about 3 cm. from the anus in the right anterolateral quadrant was noted by the mother. This was diagnosed a furuncle and incised. Drainage continued for 3 weeks, following which the baby was referred to the surgical service.

Examination revealed a small granulating sinus at the site of incision with a palpable subcutaneous tract. This was probed and led directly to the anorectal line. No internal opening was palpated or visualized through the anoscope. A diagnosis of fistula in ano was made, and the patient was admitted to the hospital for an operation. On 29 November, under general anesthesia, a pinpoint internal opening was found in a crypt directly opposite to the external orifice (fig. 2). No other anorectal abnormalities were noted. Fistulotomy was done, including division of the external anal sphincter muscle. The patient was discharged on the first postoperative day, and daily cleansing and dilatation were performed in the outpatient clinic. Healing was complete within 3 weeks. Follow-up visits to date have revealed no evidence of recurrence or incontinence.

Discussion. Fistulas are thought to arise in anal crypts, infected as a result of constipation, diarrhea, or other rectal trauma. There is apparently no age predisposition in infancy, except that

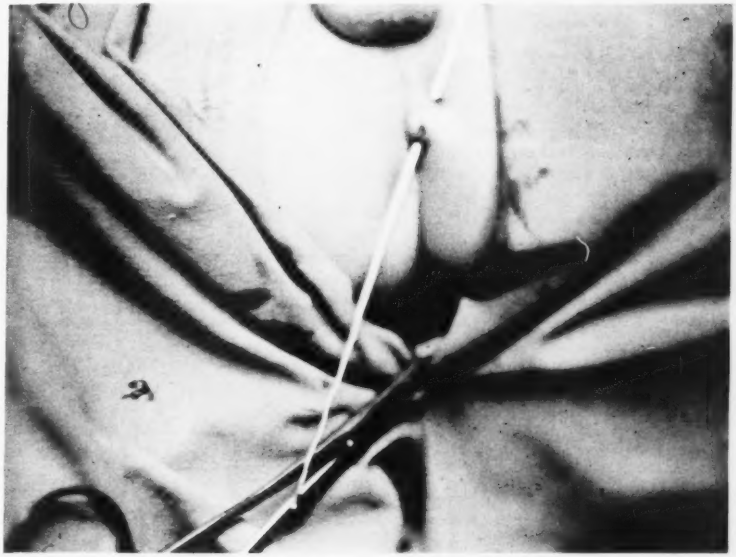

Figure 2 (case 2). Photograph demonstrating complete anal fistula in a 4½-month-old infant.

these lesions occur more frequently after the fourth month of life. According to Gabriel[9] fistulas in infants under 1 year of age rarely occur in females. Venturo pointed out that fistulas in adults are generally posterior, whereas in infants they are more frequently lateral. This difference, he believes, is due to the lack of anorectal angulation and to the prominence of the lateral crypts in infants. In addition, fistulas in infants are usually of the simple type, having only one internal and one external opening. Although often subcutaneous, they may pass deep to the external sphincter musculature. Bacon presented a photograph of such a complete fistula in a 5-week-old infant. The treatment of fistula in ano in infants is simple fistulotomy, and complete healing usually follows promptly.

Except for the absence of antecedent constipation, diarrhea, or other rectal trauma, our case of anal fistula is typical of this condition in infants. The patient recovered completely following simple fistulotomy; he has now been followed for over 6 months, and there is no evidence of incontinence or recurrence.

SUMMARY

Hemorrhoids and fistulas in ano in infants and children are rare. A case of severe bleeding hemorrhoids in a 4-year-old child and one of an anal fistula in a 4½-month-old infant have been

presented. The literature has been partially reviewed and some special features of these conditions have been discussed.

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PRENATAL CARE

Prenatal care is helpful to all women, and it is essential for a considerable number who must avoid disaster. It is obvious that pregnancy, labor, and delivery are physiological processes, and it is also obvious that all women are not normal physiologically. Therefore the objective of prenatal care is to detect and correct situations that are not physiologically normal. For example, a woman with impaired kidney function may have no signs of the weakness until the strain of pregnancy brings out the defect. Tuberculosis may increase the danger of pregnancy, especially during the period of lactation, although there were no signs or symptoms prior to the pregnancy. Heart disease is a handicap in the nonpregnant woman, and the defect is frequently brought out during the pregnancy and delivery. For normal pregnant women, and in the conditions mentioned, it is apparent that prenatal care is essential for all. It is most difficult to draw a line between health and disease, and what is thought to be a normal physiological process often develops into a pathological state.

—FRANK E. WHITACRE, M. D.
in *Journal of the American Medical Association,* p. 112, May 8, 1954

ANNUAL MEETING OF MILITARY SURGEONS IN WASHINGTON, D. C., NOVEMBER 7-9

The 62d annual convention of the Association of Military Surgeons of the United States will be held at the Statler Hotel, Washington, D. C., from 7-9 November 1955. In addition to the program listed below, panel meetings of the dental, sustaining membership, sanitary engineering, and veterinary sections will be held on Wednesday, 9 November.

Monday Morning, 7 November

Presiding: Maj. Gen. Joseph I. Martin, MC, USA, President

Association President's Address—Maj. Gen. Joseph I. Martin, MC, USA, Special Assistant to The Surgeon General, Department of the Army.

Welcoming Remarks—Frank B. Berry, M. D., Assistant Secretary of Defense (Health and Medical).

Ten Years of Atomic Medicine—Shields Warren, M. D., Advisor to the Atomic Energy Commission, Professor of Medicine, Harvard Medical School.

Military Hospitals—Maj. Gen. Silas B. Hays, MC, USA, The Surgeon General, Department of the Army.

Medical Personnel Problems in the Military Services—Rear Adm. Bartholomew W. Hogan (MC) USN, The Surgeon General, Department of the Navy.

Dependent Care in the Military Services—Maj. Gen. Dan C. Ogle, USAF (MC), The Surgeon General, Department of the Air Force.

Preventive Medicine in an Atomic Age—Leonard A. Scheele, M. D., The Surgeon General, U. S. Public Health Service.

Medical Aspects of Radiation Energy as Applied to the Hematopoietic System—William S. Middleton, M. D., Chief Medical Director, Veterans Administration.

The FCDA Medical Stockpile—John M. Whitney, M. D., Medical Director, USPHS; Director, Health Office, Federal Civil Defense Administration.

Medicinal Supplies for Mass Casualties from a Pharmaceutical Producer's Viewpoint—Raymond M. Rice, M. D., Executive Director, Medical Research, The Lilly Research Laboratories, Eli Lilly and Company.

Monday Afternoon

Presiding: Brig. Gen. Harold H. Twitchell, USAF (MC), Surgeon, Continental Air Command

Theme: *Medical Effects of Nuclear Warfare*

Introduction to Problems—Brig. Gen. James P. Cooney, MC, USA, Deputy Surgeon General, Department of the Army.

Phenomena Associated with Nuclear Detonations—Howard L. Andrews, Ph. D., Scientist Director, USPHS; Head, General Radiobiological Section, Radiation Branch, National Cancer Institute.

Mechanical and Secondary Missile Injuries—Comdr. John A. O'Donoghue (MC) USN, Head, Atomic Defense Branch, Special Weapons Defense Division, Bureau of Medicine and Surgery, Department of the Navy.

Thermal Injuries—Herman Pearse, M. D., AEC Project, University of Rochester.

Radiation Injuries Resulting from Nuclear Explosion and Fall-out—George M. Lyon, M. D., Assistant Chief Medical Director for Research, Veterans Administration.

Eye Injuries in Nuclear Warfare—Col. Victor A. Byrnes, USAF (MC), Director of Professional Services, Office of The Surgeon General, Department of the Air Force.

Tuesday Morning, 8 November

Presiding: John B. Hozier, M. D., Medical Director, Chief, Health Emergency Planning, Office of The Surgeon General, USPHS

Theme: *Principles of Care of Mass Casualties*

Introduction to Principles and Objectives—John B. Hozier, M. D.

Protective Measures in Nuclear Warfare—Lt. Col. S. E. Lifton, USAF (MC), Special Weapons Defense Officer, Preventive Medicine Division, Office of The Surgeon General, Department of the Air Force.

Casualty Estimates in Nuclear Warfare—Lt. Col. Arthur Steer, MC, USA, Chief, Department of Experimental Biology, Army Medical Service Graduate School.

Initial Aid and Rescue—John M. Whitney, M. D.

Sorting and Classification of Casualties—Lt. Col. James B. Hartgering, MC, USA, Director, Physiology and Pharmacology Division, Army Medical Service Graduate School.

Emergency Medical Care—Robert Leslie Smith, M. D., Medical Director, USPHS; Deputy Director, Health Office, FCDA.

Treatment of Mass Mechanical Injuries—Col. Joseph R. Shaeffer, MC, USA, Chief Surgical Consultant, Office of The Surgeon General, Department of the Army.

Treatment of Mass Thermal Injuries—Capt. Donald W. Miller (MC) USN, Chief of Surgery, USNH Newport.

Tuesday Afternoon

Presiding: Rear Adm. Irwin L. V. Norman (MC) USN, Assistant Chief for Personnel and Professional Operations, Bureau of Medicine and Surgery, Department of the Navy

Theme: *Principles of Care of Mass Casualties*

Introduction to Problems—Rear Adm. Irwin L. V. Norman (MC) USN.

Treatment of Radiation Injuries—Comdr. Eugene P. Cronkite (MC) USNR, Head, Pathology Division, Brookhaven National Laboratories.

Management of Mass Psychiatric Casualties—Col. Albert J. Glass, MC, USA, Deputy Director, Neuropsychiatry Division, Army Medical Service Graduate School.

Cost of Delays in Treatment—John M. Howard, M. D., Chairman, Department of Surgery, Emory University School of Medicine.

Military Medical Aspects of Antibiotics and Biologicals for Mass Casualties—Col. Herbert W. Coone, USAF (MC), Chief, Medical Service, Director of Professional Services, USAF Hospital, Wright-Patterson Air Force Base.

Blood and Plasma Volume Expanders for Mass Casualties—Capt. Lloyd R. Newhouser (MC) USN, Ret., Director, John Elliott Blood Bank of Dade County, Fla.

Anesthesia and Sedation for Mass Casualties—Col. Harvey C. Slocum, MC, USA, Chief, Anesthesia and Operative Service, Walter Reed Army Hospital.

Summary—Maj. Gen. I. S. Ravdin, MC, USAR, John Rhea Barton Professor of Surgery, University of Pennsylvania School of Medicine.

Discussion—Led by Rear Adm. Richard A. Kern (MC) USNR, Ret., Professor and Head of Department of Medicine, Temple University School of Medicine.

Wednesday Morning, 9 November

Presiding: Rear Adm. Thomas F. Cooper (MC) USN, Assistant Chief for Planning and Logistics, Bureau of Medicine and Surgery, Department of the Navy.

Theme: *Organization for the Management of Mass Casualties*

Introduction to Problems—Rear Adm. Thomas F. Cooper (MC) USN.

Public Health and Sanitation Problems in Nuclear Warfare—Robert Leslie Smith, M. D., and Albert H. Stephenson, Sanitary Engineer Director, USPHS; Director, Sanitation Division, Health Office, FCDA.

Welfare Problems in Nuclear Warfare—Honorable Charles I. Schottland, Commissioner of Social Security, Department of Health, Education, and Welfare.

Role of Nurses—Cecilia H. Hauge, R. N., Director, Nursing Service, Department of Medicine and Surgery, Veterans Administration.

Role of Medical Service Corps Officers in the Management of Mass Casualties—Comdr. Kenneth L. Knight (MSC) USN, Division of Preventive Medicine, Bureau of Medicine and Surgery, Department of the Navy.

The Role of Dietitians, Physical and Occupational Therapists in the Management of Mass Casualties—Col. Harriet S. Lee, WMSC, USA, Chief, Women's Medical Specialist Corps, Office of The Surgeon General, Department of the Army.

Role of Enlisted and Technical Assistants—Maj. John C. Delahunt, USAF (MSC), Directorate of Plans and Hospitalization, Office of The Surgeon General, Department of the Air Force.

Role of the Veterinary Officer in the Management of Mass Casualties—Lt. Col. Leslie C. Murphy, VC, USA, Deputy Director, Veterinary Division, Army Medical Service Graduate School.

The Role of the Dental Officer—Capt. John V. Niiranen (DC) USN, Chief, Prosthodontics Division, U. S. Naval Dental School, Bethesda, Md.

Role of Medical Officers—Col. Karl H. Houghton, USAF (MC), Technical Assistant, Human Factors, Air Force Special Weapons Center, Kirtland Air Force Base.

Summary and Discussion—Brig. Gen. Harold W. Glattly, MC, USA, Surgeon, First Army.

Wednesday Afternoon

Presiding: Paul M. Ireland, M. D., Director, Surgical Service, Department of Medicine and Surgery, Veterans Administration

Theme: *Organization for the Management of Mass Casualties*

Introduction to Problems—Paul M. Ireland, M. D.

Training for the Management of Mass Casualties—Col. Hallman E. Sanders, USAF (MC), 3882d School Group, Gunter Air Force Base.

Organization for the Sorting of Casualties—Lt. Col. Joseph D. Goldstein, MC, USA, Assistant Chief, Department of Atomic Casualties Studies, Army Medical Service Graduate School.

Organization of Field and Fixed Hospitals for the Management of Mass Casualties—Col. William S. Moore, MC, USA, Chief, Hospitalization and Operations Branch, Medical Plans and Operations Division, Office of The Surgeon General, Department of the Army.

Organization of "Medical Holding Units"—Col. Thomas N. Page, MC, USA, Chief, Medical Plans and Operations Division, Office of The Surgeon General, Department of the Army.

Summary—Col. Robert L. Hullinghorst, MC, USA, Deputy Commandant, Army Medical Service Graduate School.

Discussion—Led by Brig. Gen. Harold G. Scheie, MC, USAR, Commanding, 31st Hospital Center.

NOTICE: DISTRIBUTION TO ARMY PERSONNEL

A monthly gratis copy of the U. S. ARMED FORCES MEDICAL JOURNAL is available for all Army medical department officers on active duty. Those not receiving a copy should inform their post publications officer who will requisition the Journal from appropriate AG Publications Depot in accordance with AR 310-90.

Gratis copies of the Journal are not available to medical reserve officers of the Army not on active duty. They may obtain the Journal, however, on a loan basis from their medical reserve unit.

A MESSAGE FROM THE A. M. A.

A survey of physicians being released from active military service has been conducted since 1 July 1952 by the Council on National Defense of the American Medical Association. The survey is primarily designed to obtain information on the utilization of physicians in uniform; the amount of time devoted to the care of military personnel, their dependents, and others; staffing conditions for physicians and allied health personnel; comments and suggestions as to methods to improve further the military medical corps as well as ways in which organized medicine can be of greater assistance to the military physicians.

The Council decided to revise the questionnaire after analyzing the replies contained in the thousands of returned forms. It was felt that some of the questions were phrased in a manner which could result in biased or "loaded" replies. A professional testing group was employed to assist with this project. The questionnaire was revised and its distribution began on 1 July 1955. In 1956 a summary report will be made on the results obtained under the revised form.

A brief summary, covering the results of the first two years of the survey, was published last year in the *Journal*. This report, which will be continued in the November issue, covers the period from 1 July to 31 December 1954. During that period 2,373 questionnaires were mailed by the Council. Out of this number, 1,500 answered forms were returned to the Council. This represents a 63 percent response.

Age distribution by service. Of 1,500 physicians replying, 783 men were between the age of 30-34 years; 465, between 25-29 years; 200, between 35-39 years; and 52 were over 40 years of age. The largest number of physicians, 639, were in the Navy; 512 and 348 were in the Army and Air Force, respectively. One physician was in the Coast Guard. The Army had the largest number in the 30-34 age group, and the 40 and over age group. Of those in the 25-29 age group, 225 were in the Navy and 134 were in the Army.

Date of graduation from medical school. A little over half of the physicians who replied, 764 or 50.9 percent, graduated from medical school between the years 1945-1949. The second largest

From the Council on National Defense of the American Medical Association. The views and opinions expressed are not necessarily those of the Department of Defense. —*Editor.*

group, 416 or 27.7 percent, graduated between the years 1940-1944. Only 15 were medical graduates before 1940. Seven failed to reply to the question.

Years of internship and residency. By far, the majority of those responding, 1,331 or 88.8 percent, had 1 year of internship training, while 158 or 10.5 percent had 2 years. Four physicians indicated no internship while two reported 3-year internship training. There were 350 or 23.3 percent who had 3 years of residency training, while 334 or 22.3 percent had no residency. There were 260 or 17.3 percent with 1-year residency; 244 or 16.3 percent with 2 years; and 159 or 10.6 percent with 3 years' residency training.

Occupation at time of entering service. At the time of entrance on active duty, 513 physicians were in residency training and 333 were engaged in speciality practice. There were 262 in general practice; 192 in internship; and 6 in industrial practice. A total of 193 reported in "other" practice, and one failed to answer this question.

Number of physicians holding board certificates. Of the 1,500 physicians responding, 270 or 18 percent indicated that they held specialty board certificates. Of these, 87 were in the Army, 139 were in the Navy, and 44 were in the Air Force. The specialties covered were 18 different fields, of which the largest was surgery with 56, the second largest was pediatrics with 41, followed by internal medicine with 40. By branch of service, 17 percent of those responding in the Army held specialty board certificates; 21.8 percent of those in the Navy; and 12.5 percent of those in the Air Force.

Reserve status. Of the 1,500 reporting, 873 physicians retained a reserve commission, while 613 resigned their commissions. Fourteen failed to reply. In the Army, 244 out of 510 retained a reserve commission, while in the Air Force there were 128 out of 346. However, for the Navy, 501 retained commissions out of 630.

Distribution by rank at time of discharge. At time of separation from active duty, 766 physicians held the rank of first lieutenant or lieutenant (junior grade); 680 were captains or lieutenants; 40 were majors or lieutenant commanders; 6 were lieutenant colonels or commanders, and 5 were colonels or captains.

THE MEDICAL OFFICER WRITES

Articles Published in Other Journals

Artz, C. P., Lt. Col., MC, USA; Howard, J. M., Capt., MC, USAR; and Frawley, J. P., First Lt., MSC, USA: Clinical observations on use of dextran and modified fluid gelatin in combat casualties. *Surgery* 37: 612-621, Apr. 1955.

Berry, L. R., Maj., MC, USA; Swerdlow, M. A., Capt., MC, USA; and Edwards, A., Capt., MC, USA: Transitional hydatidiform mole associated with extensive hydatid degeneration of placenta and a well-developed fetus; report of case. *Am. J. Obst. & Gynec.* 69: 912-916, Apr. 1955.

Blanton, L. V., Capt., WMSC, USA: Block printing press; apparatus for treatment of radial nerve injuries. *Am. J. Occup. Therapy* 9: 65-67, Mar.-Apr. 1955.

Boysen, J. E., Lt. Col., USAF (MC): Aviation medicine at crossroads. *J. Aviation Med.* 26: 124-129, Apr. 1955.

Bradley, J. L., and Bonnette, G. H., Comdr. (DC) USN: Compound comminuted fracture of mandible; report of case. *Oral Surg., Oral Med. & Oral Path.* 8: 341-348, Apr. 1955.

Bruton, O. C., Col., MC, USA, and Heaton, L. D., Maj. Gen., MC, USA: Early correction of inguinal hernia. *J. Pediat.* 46: 437-441, Apr. 1955.

Byrnes, V. A., Col., USAF (MC); Brown, D. V. L., Capt., USAF (MC); Rose, H. W.; and Cibis, P. A.: Chorioretinal burns produced by atomic flash. *A. M. A. Arch. Ophth.* 53: 351-364, Mar. 1955.

Cavanagh, M. J., and Campanale, R. P., Lt. Col., USAF (MC): Idiopathic omental torsion simulating appendicitis. *A. M. A. Arch. Surg.* 70: 564-565, Apr. 1955.

Elliott, R. V., Capt., USAF (MC): Ballistocardiography at simulated altitudes. *J. Aviation Med.* 26: 137-147, Apr. 1955.

Emerson, G. O., Lt. Col., USAF (MC): Aircraft periscopes for pilotage. *J. Aviation Med.* 26: 121-123, Apr. 1955.

Enyart, J. L., Capt. (MC) USN: U. S. S. *Bennington* disaster; handling and initial treatment of casualties. *Mil. Med.* 116: 278-281, Apr. 1955.

Hursh, L. M., Lt. Col., MC, USA: Arthritis following use of desoxycorticosterone acetate and cortisone; occurrence in patient with adrenal cortical hypofunction. *J. A. M. A.* 157: 1005-1006, Mar. 19, 1955.

McNair, J. N., Lt. Col., MC, USA, and King, J. H., Col., MC, USA: Preservation of cornea by dehydration. *A. M. A. Arch. Ophth.* 53: 519-521, Apr. 1955.

Moseley, H. G., Col., USAF (MC): Responsibilities of military medicine. *J. A. M. A.* 157: 1482-1484, Apr. 23, 1955.

Nielsen, A. G., Comdr. (DC) USN; Richards, J. R.; and Wolcott, R. B., Comdr. (DC) USN: Ultrasonic dental cutting instrument; I. *J. Am. Dent. A.* 50: 392-399, Apr. 1955.

Nielsen, A. G., Comdr. (DC) USN: Ultrasonic dental cutting instrument; II. *J. Am. Dent. A.* 50: 399-408, Apr. 1955.

O'Keefe, F., First Lt., USAF (NC): Frenchmen's guest. *Nursing World* 129: 15-16, 29, Mar. 1955.

Palmer, E. D., Lt. Col., MC, USA: Difficulties in diagnosis of esophageal carcinoma; failure of transesophagoscopic biopsy. *Am. J. Digest. Dis.* 22: 65-67, Mar. 1955.

Palmer, E. D., Lt. Col., MC, USA, and Deutsch, D. L., Lt. Col., MC, USA: Sudden death during preparation for esophagoscopy with tetracaine gargle. *Am. J. Digest. Dis.* 22: 95-96, Apr. 1955.

Parrino, P. S., Lt. Col., MC, USA; O'Shaughnessy, E. J., Capt., MC, USA; and White, J. D., First Lt., MSC, USA: Standardization of diagnostic methods for gonococcal infections. *Am. J. Pub. Health* 45: 457-463, Apr. 1955.

Passmore, J. W., Lt. Col., MC, USA, and King, J. H., Jr., Col., MC, USA: Vital staining of conjunctiva and cornea; review of literature and critical study of certain dyes. *A. M. A. Arch. Ophth.* 53: 568-574, Apr. 1955.

Rachelson, M. H., Capt., USAF (MC), and Ferguson, W. R., Lt., USAF (MC): Piperazine in treatment of enterobiasis. *A. M. A. Am. J. Dis. Child.* 89: 346-349, Mar. 1955.

Ribble, G. B., Capt. (MC) USN: Medical department participation in vehicular motor accident program. *Mil. Med.* 116: 195-200, Mar. 1955.

Sako, Y., Capt., MC, USAR; Artz, C. P., Lt. Col., MC, USA; Howard, J. M., Capt., MC, USAR; Bronwell, A. W., Capt., MC, USAR; and Inui, F. K., Capt., MC, USAR: Survey of evacuation, resuscitation, and mortality in forward surgical hospital. *Surgery* 37: 602-611, Apr. 1955.

Sauvage, L. R., Capt., MC, USAR; Wesolowski, S. A., Capt., MC, USAR; and Pinc, R. D.: Freeze-dry process for arteries. *Surgery* 37: 585-601, Apr. 1955.

Sayer, W. J., Maj., MC, USA; Entwhisle, G., Capt., MC, USAR; Uyeno, B., First Lt., MC, USAR; and Bignall, R. C., Capt., MC, USAR: Cortisone therapy of early epidemic hemorrhagic fever; preliminary report. *Ann. Int. Med.* 42: 839-851, Apr. 1955.

Seal, J. R., Comdr. (MC) USN: Respiratory diseases in recruit training stations—etiology, prevention, and control. *Mil. Med.* 116: 265-277, Apr. 1955.

Scott, R., Jr., First Lt., MC, USA; Howard, J. M., Capt., MC, USA; Shorr, E.; Lawson, N.; and Davis, J. H., Capt., MC, USA: Circulatory homeostasis following massive injury, studies of vasodepressor and vasoexcitatory substances in circulating blood. *Ann. Surg.* 141: 504-509, Apr. 1955.

Silvis, R. S., Capt. (MC) USN: Abdominal incisions for operations on colon and rectum. *Calif. Med.* 82: 326-329, Apr. 1955.

Shaw, C. C., Capt. (MC) USN: Kolff-Merrill artificial kidney; clinical application in acute renal insufficiency. *Calif. Med.* 82: 293-302, Apr. 1955.

DEATHS

WHITE, Stanley Wise, Captain, MC, USA, Odd, Va.; assigned to 9963d Technical Unit, Valley Forge Army Hospital, Phoenixville, Pa.; graduated in 1945 from the Medical College of Virginia, Richmond, Va.; appointed a first lieutenant, USAR, 15 June 1945; commissioned a captain in the U. S. Army, 10 May 1955; died 1 August 1955, age 36, near Kingsville, Md., of injuries received in an automobile accident.

WOLFSON, Bernard Joel, Captain, USAFR (MC), Chicago, Ill.; U. S. Air Force Hospital, Scott Air Force Base, Ill.; graduated in 1950 from the University of Creighton School of Medicine, Omaha, Nebr.; appointed a first lieutenant 3 August 1953; ordered to active duty 16 October 1953; died 3 August 1955, age 28, at Barnes Hospital, St. Louis, Mo., of acute pancreatitis.

PROMOTIONS OF OFFICERS

The following officers of the military medical services on active duty in the Army, Navy, and Air Force have recently received *temporary* promotions to the rank indicated.

Medical Corps

Willard P. Arentzen, Lt. Comdr., USN
Kenneth R. Baldwin, Capt., USAF
William G. Ballinger, Capt., USAF
Donald S. Barber, Capt., USAF
Burton B. Barmore, Capt., USAF
John J. Barrett, Lt., USN
Aaron M. Bernstein, Capt., USAF
Robert W. Blalock, Lt., USN
John E. Boysen, Col., USAF
John M. Bozer, Lt., USN
Edward J. Brown, Capt., USAF
John W. Campbell, Capt., USAF
David B. Carmichael, Jr., Lt. Comdr., USN
Everett M. Chalker, Col., USAF
Phin Cohen, Capt., USAF
Joseph Deckelbaum, Capt., USAF
Milan Diklich, Jr., Lt. Comdr., USN
Robert M. Dimmette, Lt. Comdr., USN
Mark S. Dine, Capt., USAF
William L. Eubanks, Capt., USAF
Charles Fadem, Capt., USAF
John S. Featherston, Lt. Comdr., USN
Walter D. Feinberg, Capt., USAF
Willard R. Ferguson, Capt., USAF
John C. Finegan, Capt., USAF
Henry Fogelman, Lt., USN
Nathaniel E. Fowler, Lt. Comdr., USN
John J. Frederick, Capt., USAF
Elmer M. Fritz, Capt., USAF
Frank D. Fuller, Lt. Comdr., USN
Ronald F. Garvey, Capt., USAF
James H. Gillen, Jr., Capt., USN
John P. Glathe, Capt., USAF
Robert Goodwin, Lt., USN
Franklin M. Gould, Capt., USAF
Howard R. Gray, Capt., USAF
Martin O. Greaney, Jr., Lt. Comdr., USN
John S. Gruggel, Capt., USN
Edgar L. Guinn, Capt., USAF
Paul K. Hamilton, Jr., Lt. Comdr., USN
Walter F. Hansen, Lt. Comdr., USN
Bernard J. Harris, Capt., USAF
James H. Harris, Lt. Comdr., USN
Albert L. Heiser, Capt., USAF
Archie A. Hoffman, Col., USAF
Lucius C. Hollister, Jr., Lt. Col., USAF
James H. Holmes, Lt. Comdr., USN
Raleigh M. Hood, Lt. Comdr., USN
Edward A. Horr, Lt. Comdr., USN
Charles C. Houghton, Jr., Lt. Comdr., USN
Virgil M. Howie, Capt., USAF
William E. Huddleston, Capt., USAF
Thomas A. Huffman, Lt., USN
Edward A. Hynes, Capt., USN
William H. Karmany, Lt. Col., USAF
James B. Kenley, Lt., USN
Henry N. Kirkman, Jr., Capt., USAF
Louis C. Kossuth, Col., USAF
William G. Krech, Lt. Comdr., USN
Miles C. Krepela, Capt., USN
Edward P. Kuczko, Lt., USN
Donald A. Kuliman, Capt., USAF
Walter W. Larson, Capt., USAF
Charles L. Lear, Lt. Comdr., USN
Thomas H. Lewis, Lt. Comdr., USN
Zelig H. Lieberman, Capt., USAF
Richard E. Lieurance, Lt. Comdr., USN
Bernard S. Linn, Lt., USN
Donald E. Lloyd, Lt. Comdr., USN
Kurt J. Lowe, Lt., USN
Charles S. Lueth, Lt. Col., USAF
Robert J. McCarthy, Lt. Comdr., USN
Robert J. McCollister, Capt., USAF
Donald E. McCollum, Capt., USAF
William B. McCutcheon, Capt., USAF
Charles J. McGaff, Capt., USAF
Huam W. Mendenhall, Jr., Capt., USAF
Joseph A. Montimurro, Capt., USAF
Samuel L. Moschella, Lt. Comdr., USN
Joseph S. Muglia, 1st Lt., USAF
Robert E. Neurnberger, Col., USAF
Thomas E. Nix, Jr., Lt., USN
Emil J. Papa, Capt., USAF
William F. Park, Lt. Comdr., USN
Edward E. Parker, Lt. Comdr., USN
Robert A. Patterson, Col., USAF
Salvatore A. Pennisi, Capt., USAF
Chester M. Pierce, Lt., USN
Clinton B. Potter, Lt., USN
Richard L. Pourciau, Capt., USAF

Medical Corps—Continued

Frank S. Preston, Capt., USAF
John R. Pryor, Capt., USAF
Marvin Rennard, Capt., USAF
Albert L. Rosenthal, Capt., USAF
Richard L. Russell, Capt., USAF
John B. Rutledge, Capt., USAF
Myron E. Samuelson, Lt. Comdr., USN
John W. Schmaus, Capt., USAF
Richard H. Schneider, Lt., USN
Leslie W. Sederstrom, Lt. Comdr., USN
Giles A. Sexton, Capt., USAF
Robert B. Shepardson, Capt., USN
Bernard D. Sherer, Lt. Comdr., USN
Daniel M. Shook, Lt. Comdr., USN
Earl S. P. Shrago, Lt., USN
Franz H. Siemsen, Capt., USAF
Howard W. Smith, Capt., USAF
William E. Smith, Capt., USAF
Lawrence R. Sutherland, Lt. Col., USAF
Thomas H. Taber, Jr., Lt. Comdr., USN
George J. Taylor, III, Lt. Comdr., USN
Peter Teel, Lt., USN
Emmet J. Thorpe, Capt., USAF
Anton A. Tratar, Jr., Lt. Comdr., USN
Edward H. Vas Nunes, Capt., USAF
Lorrai E. Watters, Jr., Lt. Comdr., USN
Robert I. Weed, Capt., USAF
Theodore B. Weholt, Capt., USAF
John P. Welborn, Jr., Lt. Comdr., USN
Donald K. Wilson, Lt., USN
Theodore H. Wilson, Jr., Lt. Comdr., USN
Bernard J. Wolfson, Capt., USAF
William K. Woodard, Lt. Comdr., USN
Wayne L. Wright, Jr., Lt. Comdr., USN
Leslie M. Zatz, Capt., USAF

Dental Corps

Lester W. Allbeck, Lt., USN
Ralph H. Baahlmann, Lt., USN
Martin H. Baker, Lt., USN
Eugene J. Bars, Capt., USAF
Gordon P. Baxter, Lt., USN
William J. Blake, Capt., USAF
Fred F. Bork, Lt., USN
James J. Brown, Jr., Lt. Comdr., USN
Frederick W. Brumell, Capt., USAF
Robert L. Caldwell, Lt., USN
Robert W. Carpenter, Capt., USAF
John M. Carson, Capt., USAF
Raymond L. Chan, Capt., USAF
James D. Chipley, Jr., Capt., USAF
Vincent P. Ciolino, Lt., USN
Johnny R. Clapp, Lt., USN
Robert D. Cullom, Lt., USN
Stiles R. Davis, Capt., USAF
David L. Detamore, Capt., USAF
Floyd J. Dickson, Lt., USN
Dan E. Douglas, Lt., USN
Norman A. Epstein, Lt., USN
Dale I. Erickson, Capt., USAF
Earl A. Ewen, Lt., USN
Robert A. Fiocca, Lt., USN
Aaron D. Fox, Capt., USAF
Amon J. Fuson, Capt., USAF
Robert H. Gade, Jr., Capt., USAF
Edwin C. Gibson, Capt., USAF
Melvin L. Gilbert, Lt., USN
Barney D. Graham, Lt., USN
Niles F. Guichet, Lt., USN
Gene Hall, Capt., USAF
Jules J. D. Hebert, Lt., USN
Will M. Hooke, Lt., USN
Norbert R. Huebl, Capt., USAF
John D. Jacobsen, Lt., USN
John T. Janus, Lt., USN
Paul J. Johnson, Capt., USAF
James L. Jones, Capt., USAF
Gerald W. Kronfeld, Lt., USN
Irving H. Lindenauer, Lt., USN
James E. Lindermuth, Capt., USAF
Charles W. Marsh, Lt., USN
Arthur E. Marquart, Capt., USAF
Norbert E. Martyn, Capt., USAF
Joseph P. McGonnell, Comdr., USN
Howard B. McWhorter, Lt., USN
Harold E. Milkey, Capt., USAF
Earl L. Mitchell, Jr., Lt., USN
Robert L. Moore, Lt., USN
Harry T. Nomura, Capt., USAF
James E. North, Capt., USAF
Philip G. Oenbrink, Lt., USN
Charles D. Ostergren, Capt., USAF
William E. Oyler, Capt., USAF
Abraham F. Peterson, Jr., Lt., USN
William G. Pickering, Capt., USAF
Earle F. Pomije, Lt., USN
William O. Potts, Capt., USAF
Charles F. Restelle, Jr., Lt., USN
Charles W. Riggs, Capt., USAF
Allen Rosenberg, 1st Lt., USAF
Richard J. Rost, Capt., USAF
Lee J. Sarberg, Capt., USAF
Atsushi S. Sato, Capt., USAF
Samuel Senderowitz, Maj., USAF
Joseph G. Silvestri, Jr., Lt., USN
Howard N. Stein, Lt., USN
Leon G. Suehs, Lt. Comdr., USN
Donald J. Taylor, Capt., USAF
Benjamin L. Thomas, Lt., USN

Dental Corps—Continued

Julian J. Thomas, Jr., Lt., USN
Howard K. Thomasson, Jr., Lt., USN
James L. Turner, Capt., USAF
George W. Walter, Jr., Comdr., USN
Charles L. Weaver, Lt., USN
Carl E. Welty, Capt., USAF
Jack L. Westover, Capt., USAF
Wilson T. Worboys, Capt., USAF
Martin H. Zais, Capt., USAF
Arthur H. Zinn, Capt., USAF

Medical Service Corps

Walter E. Beam, Jr., Lt., USN
Kenneth E. Becker, 1st Lt., USAF
Wiley M. Bordeaux, 1st Lt., USAF
Lenvol G. Bowers, 1st Lt., USAF
Joseph H. Brouillette, Jr., Lt., USN
Douglas S. Cherry, 1st Lt., USAF
Robert C. Couch, 1st Lt., USAF
William M. Dailey, Lt., USN
Jack N. Fingersh, 1st Lt., USAF
Noel L. Freeman, Lt., USN
Andrew J. Gaspar, Lt., USN
Eugene F. Hames, 1st Lt., USAF
Harwin M. Hosler, Lt., USN
Godfrey S. Huber, Lt., USN
Harold L. Johnson, 1st Lt., USAF
Richard R. Leposky, 1st Lt., USAF
Calman Levich, Lt., USN
William W. Mather, 1st Lt., USAF
Dallas H. Matkin, 1st Lt., USAF
Francis E. McGuire, Lt., USN
Allen E. McMichael, Lt., USN
John A. Moody, Lt., USN
Ralph Perkner, Lt., USN
Lucien E. Puckett, Lt., USN
John P. Quinn, Lt., USN
Joseph F. Ramsey, Lt., USN
Bertram G. Sallen, 1st Lt., USAF
Edwin F. Sobol, 1st Lt., USAF
Hulett D. Sumlin, 1st Lt., USAF
Russell J. Thomas, 1st Lt., USAF
Edgar G. Waggoner, Lt., USN
Raymond A. Weger, Lt., USN
Bernard M. Weinstein, 1st Lt., USAF

Nurse Corps

Lucy B. Barnes, 1st Lt., USAF
Nellie C. Borso, 1st Lt., USAF
Florajean H. Brown, Capt., USAF
Johanna E. Buchal, 1st Lt., USAF
Anna M. Burns, Lt., USN
Adele D. Cieslewicz, 1st Lt., USAF
Rose M. Clemens, Lt., USN
Theodora M. Cooper, 1st Lt., USAF
Helen T. Daniels, 1st Lt., USAF
Patricia A. Duffy, 1st Lt., USAF
Ludean K. Eanes, 1st Lt., USAF
Anna M. Evasovick, 1st Lt., USAF
Grace O. Fish, Lt., USN
Pearl Y. Gasper, Lt., USN
Mary B. Ginderske, 1st Lt., USAF
Goldie D. Greer, Lt., USN
Dicie A. Griffith, 1st Lt., USAF
Annabelle M. Grywalski, 1st Lt., USAF
Helen Gumrot, 1st Lt., USAF
Audrey C. Haley, 1st Lt., USAF
Regena R. Hancock, 1st Lt., USAF
Marilyn Hunt, 1st Lt., USAF
Jeanette T. Hyde, Capt., USAF
Roberta T. M. Jill, 1st Lt., USAF
Alma V. Kelly, 1st Lt., USAF
Daisy L. Lankford, 1st Lt., USAF
Theresa C. Leonard, 1st Lt., USAF
Arline F. Love, 1st Lt., USAF
Dolores M. Markosky, Lt., USN
Dorothy A. Mayakis, 1st Lt., USAF
Mayde M. McConkey, Capt., USAF
Frances S. McCord, Maj., USA
Jean E. McDonald, 1st Lt., USAF
Betty E. Messersmith, Maj., USA
Grace G. Moore, 1st Lt., USAF
Barbara Moulden, 1st Lt., USAF
Marianne R. Muglia, 1st Lt., USAF
Doris M. Munson, Capt., USAF
Hazel S. Nicholas, Maj., USA
Marsciene A. B. Perreault, Maj., USA
Laurine R. Pike, 1st Lt., USAF
Mary M. Preston, Maj., USA
Helen E. Pugsley, Maj., USA
Norma A. Royse, 1st Lt., USA
Amanda E. Schuchmann, Maj., USA
Elizabeth F. Sedor, Maj., USA
Mildred M. Smith, Lt., USN
Vivian E. Smith, Lt., USN
Connie Snape, Maj., USA
Ruth M. Steenburgh, Maj., USA
Katrine F. Stone, Maj., USA
Lois M. Thomas, Capt., USAF
Mary A. Tonne, Capt., USAF
Margaret D. Wallner, Maj., USA
Rebecca Webber, Maj., USA
Margaret H. Wheeler, Maj., USA
Elizabeth A. Wilde, Maj., USA
Martha J. Yancey, Maj., USA

NEW CHIEF OF ARMY NURSE CORPS

Lieutenant Colonel Inez Haynes has been named Chief of the Army Nurse Corps to succeed Colonel Ruby F. Bryant, whose 4-year statutory term as Chief expires 30 September.

The rank of Colonel will be given the new chief on 1 October when she will be sworn in with appropriate ceremonies in the office of Major General Silas B. Hays, Surgeon General of the Army. Until that date Colonel Haynes will serve as Deputy Chief of the Army Nurse Corps, filling the vacancy caused by the retirement of Lieutenant Colonel Rosalie D. Colhoun.

Colonel Haynes entered on active duty at Fort Sam Houston, Tex., on 1 December 1933. She has had overseas service in the Philippine Islands, the Pacific Theater, and in Europe. Her last duty assignment before coming to Washington was at the University of Minnesota, from which she was graduated in June 1955 with a B. S. degree in nursing education.

ITEMS OF HISTORICAL INTEREST WANTED

Anyone having military medical items of equipment, photographs, or paintings of a historical nature are requested to loan or donate those items to the Army Medical Museum, Brooke Army Medical Center, Fort Sam Houston, Tex. For further information and shipping instructions write the Museum Officer, Medical Field Service School, Fort Sam Houston, Tex. Loaned or donated property will bear the name of the consignor when the item is on display.

Reviews of Recent Books

HANDBOOK OF RADIOLOGY, edited by *Russell H. Morgan*, M. D., and *Kenneth E. Corrigan*, Ph. D. 518 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1955. Price $10.

Next to retaining within one's mind a vast store of useful and essential data, the easy accessibility in a handbook to such information is most desirable.

This book is intended for use by all workers in the field of ionizing radiations, clinical, experimental, and industrial. It is a compilation of quantitative data, assembled in six sections and four appendixes and presented generally in tabular and condensed form. The first section includes numerous definitions of physical terms and units and conversion tables of physical factors. The definitions are concise but have sufficient clarity for an adequate understanding of each term.

The remaining five sections concern general physical information, radiotherapeutic data including depth dose tables and radium dosimetry, radioisotopes, radiography and fluoroscopy, and radiation protection. The four appendixes list drugs commonly used in radiology, mathematical tables, the Greek alphabet, and diagrams of x-ray generators and particle accelerators.

It is apparent that future editions will be necessary to keep pace with the expanding knowledge in radiology. Questions might then arise as to what might be included or omitted in order to keep the size of the book within reasonable limits. I believe that mathematical tables are readily available in many forms and might well be considered as superfluous. Similarly, roentgenographic technic is covered rather sketchily as compared to the standard texts on this subject and could be deleted, particularly because individualized technics are used in most radiological departments.

Nevertheless, these criticisms do not detract from the value of the book. Those for whom the work is intended will doubtless have numerous occasions to refer to it.—*HARRY L. BERMAN, Col., MC, USA*

THE TUBERCLE BACILLUS in the Pulmonary Lesion of Man, by *Georges Canetti*, M. D. 226 pages; illustrated. Springer Publishing Co., Inc., New York, N. Y., 1955. Price $8.50.

The title of this book could lead to the belief that it is best suited to the needs of the pathologist and the bacteriologist. It is, however, as important for the practicing physician as it is a reference source for the laboratory scientist and the student of tuberculosis. In this study many of the complex and dynamic phenomena of host reaction in tuber-

culosis to aggressive (parasitic) forces, discussed in detail, are applicable to and illustrative of infectious diseases in general, and the book provides magnificent and fascinating detail of the natural history of the disease process in experimental animals and human beings. This latter achievement is of paramount importance, for the physician's opportunity to improve his insight into, and understanding and management of, clinical problems is equally determined through the study of a disease process in great detail, as in the experience gained through treating large numbers of patients.

The organization of content is excellent and provides the potential of a solid educational experience. In the beginning is a basic review of the histology of the various kinds of lesions in pulmonary tuberculosis. Next, the author presents the bacillary characteristics of these lesions in man and experimental animals. These aspects are then integrated into the histobacteriologic point of view to provide a means for evaluating concepts of immunity and allergy. Then follows an exciting and truly stimulating conclusion as to how the histobacteriologic features of the lesions enter into the successes and failures of treatment, and how this basic information may be used to predict trends, expectations, and problems in the future. The bibliography is entirely satisfactory. There are many tissue sections for illustration, but they have the disadvantages of poor contrast and reality images inherent in black and white sections, as over and against the vitality and descriptiveness of color.

The book is based on the author's experience with autopsies of 1,500 patients who died with tuberculosis over a seven-year period. He correlated all his findings at autopsy with the clinical and radiologic records of each patient. In this way he provides, for the first time in English, a detailed study of the histobacteriologic features of pulmonary tuberculosis in man.— *JAMES C. SYNER, Capt., MC, USA*

HANDBOOK OF TREATMENT, by *Harold Thomas Hyman,* M. D. 511 pages. J. B. Lippincott Co., Philadelphia, Pa., 1955. Price $8.

In this handbook, Doctor Hyman has compiled a readily accessible, practical, and sensible approach to modern therapy. He has arranged disease entities, the more important clinical symptoms such as dyspnea and edema, and the major drugs or drug classes such as antibiotics and diuretics in alphabetical sequence. The addition of many well-arranged tables will afford much convenience to the reader and is perhaps the most valuable feature of the book.

There is probably nothing so maddening as trying to keep a textbook up to date with advances in treatment; and this book, though issued in 1955, has no comment on metacortandracin, metacortandralone, cycloserine, the versenes, the new antipolio immunization, myleran, insulin lente, and others. Although the author has endeavored to eliminate outmoded preparations, he still has retained too many of them.

There are a few errors, but the most serious criticism concerns the lack of a section on acute poisonings and other emergencies such as asphyxiation and drowning. The early management of burns should have been included, because it deservedly belongs to the internist and general physician.

Doctor Hyman is to be commended for such an excellent book. Frequent revisions will be required to keep it as current as other texts devoted to therapeutics.—*JULIAN LOVE, Capt. (MC) USN*

REGIONAL ENTERITIS, by *Frederick F. Boyce,* M. D. 84 pages; illustrated. J. B. Lippincott Co., Philadelphia, Pa., 1955. Price $2.35.

This pocket-sized monograph presents material previously published in the *American Practitioner and Digest of Treatment* for September 1954. In an interpretation of the author's experience with regional enteritis, he stresses the importance of the disease and gives his personal experiences and a review of the recent literature.

The increased incidence of regional enteritis, the wide range of its clinical manifestations, and the discouraging therapeutic results with both medical and surgical management are ably discussed. Etiologic considerations, the pathologic process, and the anatomic distribution of the disease are presented. An effort is made to correlate pathologic and clinical manifestations and to stress the diffuse nature of the disease. The clinical and diagnostic problems encountered are discussed briefly, clearly, and to the point. Seven case histories are presented to illustrate all the points made. The section on therapeutics is complete from the viewpoint of the internist and the surgeon. The problem of recurrence in the adult and the nonrecurring nature of the disease in children is considered.

This monograph is recommended as an excellent reference for the medical student, the general practitioner, and the specialist.

—*WILLIAM STEIN, Lt. Col., MC, USA*

EARLY CARE OF ACUTE SOFT TISSUE INJURIES, *Committee on Trauma,* 1st edition. 192 pages. American College of Surgeons, Chicago, Ill., 1954.

This manual is a guide for the early treatment of traumatic lesions exclusive of fractures. It is particularly valuable as an objective standard of surgical practice in the treatment of traumatic lesions. The effort by the Committee on Trauma of the American College of Surgeons to formulate such a standard is highly commendable and important in view of the present world situation, the possibility of renewed conflict, and also the great accident toll in this country.

The subject material of the manual is presented in a series of chapters on the general principles of wound care, first aid, physical examinations, and regional problems of the neck, head, spine, face, abdomen, thorax, et cetera. A rather extensive coverage is made of each region and compartment of the human body. Burns, amputations, hand injuries,

vascular injuries, joint injuries, and peripheral nerve injuries are discussed in separate chapters. It is compactly written and in no way verbose. A tremendous amount of experience and material has been condensed in the brief and somewhat didactic chapters. No index or bibliography is included and justifiably so, as this is not a complete text on traumatic surgery. It is intended to be a guide to a standard of treatment, not only for the student but for the general practitioner and specialist. As such, it fulfills its purpose excellently.

—ELMORE M. ARONSTAM, Lt. Col., MC, USA

DIAGNOSTIC LABORATORY HEMATOLOGY, by *George E. Cartwright*, M. D. 104 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., 1954. Price $3.

In this small volume written for the student, house staff officer, and practicing physician, the author presents hematological procedures which, in his experience, are most practical from the viewpoint of simplicity, accuracy, reliability, time of performance, and cost and availability of equipment. He has selected a number of procedures which are cursory and self-limited in the information they elicit and has failed to include old and new tests that have come to have a prominent place in diagnostic laboratory hematology. Basic hematological procedures are given in essential detail with precautions, sources of error, and comments added. Examination of blood smears and bone marrow is discussed in a similar manner. There are about 18 pages devoted to the examination of blood, urine, and feces for pigments related to hemoglobin. The section on coagulation of the blood is brief and does not include such diagnostic procedures as prothrombin time, prothrombin consumption, and coagulation in siliconized tubes. The section on examinations concerned with hemolytic anemia is sketchy and one of the most important procedures, the Coombs test, has been omitted. Conspicuous by their absence are sections on blood group antigens and antibodies, recent advances, and references to additional basic and detailed methodology in clinical and laboratory studies of abnormal hemoglobins. Any addition to technical literature by specialists in their field should reflect the current trends in technical procedures and interpretations so as to make them available to those who otherwise do not have the time or background for the necessary investigation. The manual falls short of such expectations.

—JOSEPH H. AKEROYD, Lt. Col., MSC, USA

HOSPITAL FORMULARY OF SELECTED DRUGS, by *Don E. Francke*. 759 pages; illustrated. Hamilton Press, Hamilton, Ill., 1954. Price $5.

This formulary was prepared particularly for use in the University Hospital of the University of Michigan, where the author is chief pharmacist, but will provide a valuable book of reference for other hospitals and individual practitioners.

Effective therapy requires discrimination in the selection of drugs, and a thorough knowledge of a selected group of important drugs pro-

vides a basis for evaluation of new therapeutic agents. In this book drugs appear under their official or generic names, although trade names have also been used, either for purposes of identification or because only one brand of a drug is available. No attempt has been made to include all trade names for a basic drug. The author has endeavored to designate official drugs as they will appear in the new revisions of the *United States Pharmacopoeia* and the *National Formulary*.

The arrangement of material is simple and logical. Drugs are listed in groups, according to their use. The chemical formula is given, with a brief discussion of the drug and a statement of dosage and preparations. The physician also will find that the inclusion of names of proprietary preparations, a feature not found in the 1946 edition of the formulary, makes it easier to understand and evaluate his pharmaceutical mail.—*RUSSELL L. TAYLOR, Comdr. (MSC) USN*

SMOKING AND CANCER, A Doctor's Report, by *Alton Ochsner*, M. D. 86 pages; illustrated. Julian Messner, Inc., New York, N. Y., 1954. Price $2.

The alarming increase in the incidence of cancer of the lung within recent years has caused this disease to become one of intense interest to the public. This short monograph is written primarily for the laity, but the facts indicting the use of tobacco, particularly cigarette smoking, as a causative agent of lung cancer are so clearly and succinctly marshalled that the treatise is well worth the perusal of anyone, in or out of the profession.

The author quotes various statistical studies, both from this country and abroad, which appear to show that the incidence of lung cancer is strikingly increased among those who smoke, and particularly those who smoke cigarettes to excess over a long period of years. To round out his condemnation of the use of tobacco, Doctor Ochsner points out the carcinogenic affects of snuff, chewing tobacco, cigars, and pipes, noting the increased incidence of cancer of the lip, tongue, upper respiratory tract, and lungs among those addicted to these uses of tobacco. Mention is also made of the well-established and long-accepted adverse affects on the cardiovascular system which result from the sustained use of tobacco products.

The use of cigarettes with filters as a preventive of lung cancer is derided. It is pointed out that the less one smokes the less his hazard of lung cancer. Smokers are told that they *can* stop smoking. In essence, the author's advice is for one to want to stop smoking and to exercise will power in doing so. The tobacco industry is castigated for its blatant advertising. It is suggested that this advertising does not always hew to the line of scientific truth and that it tends to promote a habit that constitutes a public health hazard.

This reviewer accepts as a categorical fact that smoking exerts a harmful role, if not an actual causative one, in certain cardiovascular disorders. He further believes that there is strong suggestive evidence

that smoking plays some role in the etiology of lung cancer. For these reasons, he considers as sound Doctor Ochsner's advice that man would profit were he to refrain from the use of tobacco in any form. However, the subject of the cause of lung cancer (or of any cancer) is so complex that he cannot accept as a fact the statement that "cigarettes cause cancer."

This book is recommended reading for all who are interested in the subject of lung cancer. And who isn't?

—*CLIFFORD F. STOREY, Capt. (MC) USN*

CARE OF LABORATORY ANIMALS, A manual prepared by the Subcommittee on Diagnostic Procedure and Reagents and approved for publication by the Coordinating Committee on Laboratory Methods and by the Committee on Research and Standards. 66 pages; illustrated; paper cover. Published by American Public Health Association, Inc., New York, N. Y., 1954. Price $0.75.

This manual is an attempt to fulfill a need for a simplified guide to the proper care of laboratory animals. It is written largely in outline form and presents a concise summary of the information which those charged with the routine care and management of laboratory animals need. No attempt to present detailed explanations of these procedures is made.

The exclusion of certain background material, such as the principles of sanitation, nutrition, and housing, may be questioned. The information presented, however, will be of considerable value to animal caretakers when supplemented by explanations of the basic principles involved. Information is presented on mice, rats, guinea pigs, rabbits, hamsters, cotton rats, ferrets, cats, dogs, monkeys, sheep and goats, domestic fowl, and frogs. Brief sections also are presented on the control of laboratory pests and parasites, food selection and storage, and control of some laboratory animals' diseases.

The bibliography is inadequate and reflects the need for a guide that will lay the foundation for a standardized method of raising and caring for laboratory animals by spelling out the proved principles and practices according to which an animal colony should be operated.

—*ROBERT D. HENTHORNE, Capt., VC, USA*

GOOD GENERAL PRACTICE, A Report of a Survey by *Stephen Taylor*, M. D., M. R. C. P. 604 pages; illustrated. Oxford University Press, New York, N. Y., 1954. Price $3.50.

This study of the daily professional routines and working arrangements of nearly 100 outstanding British general practitioners was sponsored by the Nuffield Provincial Hospitals Trust as a means of providing suggestions for improving the standards of general practice. Previous reports, which cited rather startling conditions among general practitioners at the lower end of the professional scale, indicated the need for study of this type.

For periods of one to five days the author visited selected practitioners, studying all phases of their working conditions and accompanying them on calls and office visits. In analyzing his material he makes very little use of the various adjuncts of the statistical method, but presents instead a remarkably clear and frank discussion of high-grade general practitioners functioning under the National Health Service Act. The author draws on earlier reports for examples of poor practice, and describes in detail practical means for advancing toward the level of the best practitioners. The writing is warm, friendly, tinged with humor, almost chatty at times, and never stilted or contrived. This is an extremely frank and revealing book.

As he presents detailed practical suggestions for improving the standards of medical care, the author gives us an intimate view of the best and worst of general practice in England.

A sidelight on the paper-work situation is seen in the "corset certificate," which brings the doctor irritation and a fee equivalent to 28 cents. Another interesting certificate covers "pregnancy, milk, eggs, soap, and other unspecified commodities."

While the book is intended primarily for general practitioners in Great Britain, it is of unusual interest to the medical profession in this country. The open, unreserved treatment of a subject with such controversial implications makes fascinating reading for all concerned with medical care, whether friends or foes of the concept of socialized medicine.—*ROBERT L. WARE, Capt. (MC) USN*

THE LUNG, by *Julius H. Comroe, Jr.*, M. D., *Robert E. Forster, II*, M. D., *Arthur B. Dubois*, M. D., *William A. Briscoe*, M. D., and *Elizabeth Carlsen*, A. B. 219 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1955. Price $5.50.

In their preface, the authors state they are writing for doctors and medical students, to explain in simple words and by means of diagrams those aspects of pulmonary physiology that are important in clinical medicine.

The book is very well illustrated by means of diagrams and charts. The presentation is orderly and logical. The various chapters treat of basic information on lung volume, pulmonary ventilation, circulation and ventilation, blood flow ratios, diffusion of gases, and mechanics of breathing.

Although this vital information is succinct, its presentation assumes that many doctors and most medical students are experts in physical chemistry, mathematics, and diagrammatics. Because this reviewer cannot claim distinction in any of the three fields, he found the reading difficult and comprehension obscure.

Physiologic tests indicate only how disease has altered function. Thus, pulmonary function studies cannot tell where or what the lesion is or, if it does not interfere with the function of the lung, even if a

lesion exists. Hence, such studies can never replace a careful history, thorough physical examination, and radiologic, bacteriologic, bronchoscopic, or pathologic investigation.

It is questionable whether pulmonary function tests *per se,* because of their complexity, are comparable in clinical applicability to tests of hepatic, renal, cardiovascular, and neuromuscular functions. The monograph is well adapted for the graduate student in physiology, but fails to clarify the capsular comprehension of the calcified clinician.

—*CHRISTOPHER C. SHAW, Capt. (MC) USN*

SEGMENTAL ANATOMY OF THE LUNGS, by *Edward A. Boyden,* Ph. D. 276 pages; illustrated. The Blakiston Division, McGraw-Hill Book Co., Inc., New York, N. Y., 1955. Price $15.

This comprehensive and well-illustrated anatomic text, dealing with the most infinite and minute details of the segmental bronchi and related pulmonary vessels, will serve as a valuable reference for the thoracic surgeon, bronchoscopist, roentgenologist, pathologist, pulmonary physiologist, and any physician interested in the clinical problems pertaining to pulmonary diseases.

The first chapter depicts an interesting historical review of the evolution of gross anatomic concepts and knowledge derived from centuries of study and investigations directed at the human bronchopulmonary tree. The next eight chapters analyze the prevailing gross structural patterns of the segmental and subsegmental bronchial and vascular distributions. Descriptive sketch illustrations in contrast colors are used to portray anatomic territories of such anatomic units as viewed from all pleural surfaces and angles. The basic terminology devised by Jackson and Huber, generally accepted internationally, has been followed by the author; some exceptions and additional anatomic descriptive terminology based on location of peripheral anatomic structures has of necessity, due to detailed minute anatomic mappings, been introduced.

The ninth chapter concerns the stage development of the human lungs and summarizes the present concepts pertaining to some of the gross congenital anomalies. This chapter is thoroughly interesting and provocative, and is offered as an excellent clinical reference.

The tenth and last chapter is brief and is actually an introductory legend for the last 12 color plates (each having a separate legend) which depicts the complete anatomy of two sets of "normal" human lungs, yet one pair presents 24 bronchial or vascular deviations from what the author has statistically established as a prevailing anatomic pattern. The second pair of lungs contains 23 minor deviations from prevailing patterns.

The author realized early in this investigative anatomic study that the pulmonary segments presented seemingly endless variations in the arrangement of parts; yet he has, after nine years of intensive dissec-

tion and study, been able to establish empirical prevailing patterns which tend to somewhat simplify the most difficult of all gross anatomic structures.

This text is recommended as a valuable reference for all students, instructors, and clinicians interested in pulmonary problems and will no doubt become part of all professional libraries at home and abroad.

—*JOHN M. SALYER, Col., MC, USA*

SPORTS INJURIES, Prevention and Active Treatment, by *Christopher Woodard.* 2d edition. 128 pages; illustrated. Published by Max Parrish & Co., Ltd., London wl. Distributed by Track & Field News, Los Altos, Calif., 1954. Price $3.

This small volume was written for the guidance of trainers, coaches, masseurs, and physiotherapists. It is an impassioned plea for the active treatment of injuries sustained while engaged in sports, which the author states will bring far better end results in 99 cases out of 100 than will the traditional conservative treatment by a nonspecialist in this field. Active treatment is defined as avoiding splinting, heat, or massage, and instituting stretching and exercise early. Considerable stress is placed on preconditioning for prevention of such injuries, but many of the ideas are expressed in archaic terminology; as an example, ox-liver concentrate is recommended as a panacea because it "tunes up" the liver.

Much space is devoted to training technics, and about half of the volume deals with definite injuries. Although the author "signposts the type of case which should be given expert medical attention," he prescribes methods of treatment for specific diseases and injuries that are not commonly used by American surgeons. The style is informal, and injuries of numerous prominent British athletes are discussed as examples, in the arguments presented. This volume has value to surgeons, only for information as to the type of treatment trainers and coaches use on their athletes unless closely supervised.

—*JOHN H. SPILLAINE, Lt. Col., MC, USA*

DRUGS IN CURRENT USE, 1955, edited by *Walter Modell,* M. D. 148 pages; dictionary style. Springer Publishing Co., Inc., New York, N. Y., 1955. Price $2.

This little soft-cover book is an alphabetical listing of the more commonly used drugs. The principal pharmacologic characteristics, properties, actions, dosage, et cetera, are tersely mentioned. It is said to be "reliable as the best hospital formulary anywhere" and "comprehensive enough to be universally useful."

Unfortunately its shortcomings would seem to limit its usefulness. A number of clearly obsolete or unimportant drugs are mentioned, *e. g.,* rosemary oil and persic oil. Checking on benadryl, one is referred to diphenhydramine, U. S. P. From there one is told to see "antihistamine drugs." Certainly there seems to be an unnecessary step involved. Other criticisms could be noted. The dosage schedule of penicillin

is grossly inadequate. Some drugs, *e. g.*, INH, are not listed when one finds the class to which they belong, although they may appear under their brand name. The manufacturer is not listed and the physician has no way of checking on this point. Certain proprietary preparations are omitted from lists of similar drugs.

The bases for the descriptions are the *U. S. Pharmacopeia, National Formulary, New and Nonofficial Remedies, Modern Drug Encyclopedia,* and similar sources. Little seems to be gained in this condensation of that material. Furthermore, the *Physician's Desk Reference* would appear to be more helpful. —*S. O. WAIFE, Lt. (MC) USNR*

BASIC SCIENCES IN ANESTHESIOLOGY (A Guide for Study), by *Arthur B. Tarrow,* M. D., M. S. 2d edition. 274 pages. The Lydette Publishing Co., San Antonio, Tex. 1955. Price $5.

This manual was prepared as a guide to assist members of the medical profession in preparing for the examinations of the American Board of Anesthesiology. It is not designed to substitute for comprehensive reading, but is an outline for study, accompanied by copious references.

Questions from written examinations given in previous years are answered, and the specific reference given. Most discussions are abstracted from the reference. The few apparent errors are those in which only one viewpoint of controversial questions is presented.

In addition to questions and answers, with references, there is a list of recommended books for a personal basic library for the specialist in anesthesiology. The manual is paper bound with loose-leaf type pages on plastic rings. The reviewer considers the price well spent if the manual is used in the manner and for the purpose for which it is designed.—*HOWARD K. PEDIGO, Lt. Col., MC, USA*

CLUES IN THE DIAGNOSIS AND TREATMENT OF HEART DISEASE, by *Paul D. White,* M. D. American Lecture Series, Publication Number 242, A Monograph in The Bannerstone Division of American Lectures in Circulation. Edited by *Irvine H. Page,* M. D., and *A. C. Corcoran,* M. D. 186 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1955. Price $5.50.

This book has been true to its purpose and title. In it the author presents in brief and compact style those features of cardiovascular examination and treatment which he has found to be of practical and decisive value. Technical and elaborate methods of study such as cardiac catheterization and angiocardiography are not discussed, because it is the author's intent to emphasize the important features of methods of examination available to the majority of practicing physicians. Maximum attention is given to the important clues to be found or searched for in the patient's history. Physical signs, roentgenology, and electrocardiography are discussed less fully. The index is superior. Although the book is not a complete text on cardiology and does not pretend to be, it is an excellent book for the medical student and of interest to the cardiologist.—*THOMAS W. INMON, Lt. Col., MC, USA*

THE HISTORY AND CONQUEST OF COMMON DISEASES, edited by *Walter R. Bett.* 334 pages. The University of Oklahoma Press, Norman, Okla., 1954. Price $4.

The preface of this collection of 17 articles by prominent British and American physicians states "it is intended mainly for patients, but also for the medical profession." Among the subjects discussed are acute communicable diseases, influenza, pneumonia, rheumatism, arthritis, heart disease, venereal diseases, tonsillitis and adenoiditis, appendicitis, epilepsy, and cancer.

Most of the articles describe the status of knowledge on the subject in the ancient cultures that flourished around the eastern end of the Mediterranean in the pre-Christian eras. The growth of this knowledge or the variations in misbelief, as is often the case, are then traced to modern times. The book emphasises the fact that the great bulk of existing medical knowledge is less than a century old. Some of the articles devote much space to the unenlightened gropings of the ancients and too little to the scientific developments of recent times.

Because the book is intended for both patients and physicians, it does not well fit either. It is too thin for the physician, and it presumes a degree of erudition which the average American reader does not have. In spite of a five-page glossary of medical terms, it still contains many unfamiliar words and phrases. About a tenth of the pages are devoted to references and suggestions for further reading. Some are in foreign languages.

By some happy fortune a chapter on malingering is included in the book. There was little mention of it in ancient times; apparently under the prevailing pagan influences there was so little sympathy for human suffering "that the simulation of disease was not likely to be a profitable procedure in those times." Conversely, the spread of Christian influences with their emphasis on charity gave rise to many abuses which encouraged feigned diseases. In the middle ages children were mutilated to better serve as beggars. Religious hoaxes involving stigmatization and miracle cures were frequent. This, probably, is the best chapter in the book. —*HARTWIN A. SCHULZE, Col., USAF (MC)*

SURGERY OF THE SMALL AND LARGE INTESTINE, A Handbook of Operative Surgery, by *Charles W. Mayo,* M. D. 340 pages; illustrated by *Russell Drake.* The Year Book Publishers, Inc., Chicago, Ill., 1955. Price $9.

This handbook presents concise descriptions and illustrations of the more common surgical procedures employed in treating lesions of the small and large intestine, including the rectum. It is complete and thorough in describing the pre- and post-operative management. Several pages are devoted to minute details of low residue, liquid, and solid diets, as well as formulas for tube feeding and intravenous medications. The gross anatomy, blood supply, lymph drainage, errors, and pitfalls of each operation are covered fully in the text and by illustrations.

The format of the book is excellent. On the left hand pages the text is presented along with a description of the illustration on the opposite pages. This means that about half the book is composed of illustrations showing, step by step, the operations recommended. These illustrations are simple but excellent, in that they include the essential features and omit the extraneous details.

Many surgeons may disagree with some of the recommended operations for regional ileitis and ulcerative colitis, especially those in which short-circuiting is advocated, leaving infected, diseased, feces-laden loops of intestine in the abdominal cavity. Also, it would have been better to omit the portion on anal diseases and leave it to another volume, rather than to try to cover this large field in four pages of text and four of illustrations. The latter, in this particular portion of the book, tend to obscure the text instead of revealing its meaning.

To the surgeon or general practitioner who occasionally ventures into the field of intestinal surgery, and to the resident or surgeon who wants a quick brush-up in methods and technic before surgery, this book is highly recommended. For these, the volume fulfills a real need and does it well.—*LAWRENCE L. BEAN, Capt. (MC) USN*

GESTATION, Transactions of the First Conference, March 9, 10, and 11, 1954, Princeton, N. J., edited by *Louis B. Flexner*, M. D. 238 pages; illustrated. Sponsored by the Josiah Macy, Jr. Foundation, New York, N. Y., 1955. Printed in the United States of America by Corlies, Macy & Co., Inc., New York, N. Y., 1955. Price $5.

This volume is an authoritative compilation of the thinking of world authorities on such subjects as the functional role of the placenta, sugar transport in the ungulate placenta, and the anatomy of the placental barrier. It brings together the opinions of outstanding anatomists, physiologists, embryologists, pathologists, obstetricians, zoologists, psychiatrists, and oncologists. In this conference report, a group of discussants representing a wide variety of scientific specialties endeavor to obviate the obstruction to mutual understanding which normally exists between the many disciplines and specialties in the general field of science.

The conferences take the form of discussions among the 25 participants, and must be read to be appreciated. Conclusions are not drawn, but the subjects of placentation, placental physiology especially with respect to sugar transport in mammals and ungulates, and the anatomy and physiology of the placental barrier in higher mammals are thoroughly ventilated. A useful appendix containing a classification of all the presently known enzymes of the human placenta completes the work.

This volume is a valuable presentation of a complicated subject, discussed from various scientific approaches. It should be of help to students and practitioners of medical as well as allied sciences.

—*ALBERT T. WALKER, Capt. (MC) USN*

BRITISH OBSTETRICS AND GYNECOLOGICAL PRACTICE (two volumes). Obstetrics, edited by *Sir Eardley H. Holland,* M. D. *38 contributors.* 1,166 pages; 395 illustrations. Gynecology, edited by *Aleck Bourne,* M. B., with *21 contributors.* 841 pages; 363 illustrations. F. A. Davis Co., Philadelphia, Pa., 1955. Price $29.50 per set.

The list of contributors to these two volumes, one dealing with obstetrics and the other with gynecology, is an imposing roster of present-day leaders of the specialty throughout the Empire. While primarily dealing with technics and methods used in Britain and the Dominions, the literature and methods of other countries are represented when they have been found of use in British practice.

The chapters on psychiatry and obstetrics and the psychosomatic approach to childbirth ("natural childbirth"), written by Grantly Dick Read, are probably the most satisfactory expositions on the subject that I have read. Another feature of the book is the fact that the authors take into consideration the needs of the general practitioners. Such measures as may be used by them are thoroughly explored.

The volume dealing with gynecologic conditions is the most thorough and up-to-date that has been published recently. Where certain technics are recommended, they are carefully illustrated. I consider these volumes to be the most complete and satisfactory résumé in the English language of present thinking, teaching, and practice of the specialty.

Bibliographies and indexes are thoroughly adequate. Illustrations are excellent, and the book is well printed in very legible type.

—ROY E. CROWDER, Comdr. (MC) USN

PULMONARY DISEASES, edited by *Roscoe L. Pullen,* M. D., F. A. C. P. 669 pages; 195 illustrations and 4 plates, 1 in color. Lea & Febiger, Philadelphia, Pa., 1955. Price $15.

The author points out that "this volume, a collaborative one by 20 authors, presents the field of pulmonary diseases from the clinical viewpoint . . . . Brief reviews of anatomy, physiology, and pathology of various processes have been included wherever such presentations will enhance clinical understanding, but the emphasis dwells chiefly on the diagnosis and treatment of pulmonary diseases."

For the student and the clinician, the subjects are well covered and fulfill the scope which the editor defines for this text. The list of contributors is imposing, and each chapter reflects their high quality. This volume is not so exhaustive, nor the subject matter so extensive, as to fill the need of the physician whose primary interest is chest disease, but this would not be expected from a text of 669 pages. The format and printing are excellent, the reproduction of roentgenograms is good, and the bibliographies at the end of each chapter appear extensive.

The author of the chapter on the physiologic basis of pulmonary disease has been asked to do too much in the pages allowed him.

Furthermore, he has chosen to continue to use terminology that respiratory physiologists have largely discarded.

This book fulfills the need for an informative but not exhaustive text dealing with respiratory diseases. The idea of applying the concept of a complete medical diagnosis to pulmonary disease (as long advocated by the New York Heart Association in cardiac diseases) is appealing.—*CHARLES S. CHRISTIANSON, Lt. Col., MC, USA*

KINESIOLOGY OF THE HUMAN BODY Under Normal and Pathological Conditions, by *Arthur Steindler,* M. D., Eng., F. A. C. S., F. I. C. S., (Hon.) F. R. C. S. 708 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1955. Price $19.75.

Early in this volume the author contends that it is possible, with reservations, to analyze and calculate human motion in the same way that it is possible to analyze and calculate the movement of mechanical devices. The reservations required are not, in his opinion, of sufficient importance "to vitiate the practical value of the mathematical computations." He then proceeds to a discussion of the physical properties in the normal and abnormal states of the various tissues that make up the human locomotor system, and analyzes the effect of mechanical forces on these tissues. With this background of information, there follows a discussion of the mechanical structure of the spine and the joints of the extremities.

The work is well printed and bound, and well illustrated. Complete author and subject indexes enhance its value. This volume will find its greatest use in reference libraries, and will appeal particularly to those who desire a more complete understanding of the underlying mechanical laws which operate in producing abnormalities of the structure and function of the locomotor systems.

—*JOHN H. CHEFFEY, Comdr. (MC) USN*

THE YEAR BOOK OF UROLOGY (1954-1955 Year Book Series), edited by *William Wallace Scott,* M. D., Ph. D. 372 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1955. Price $6.

This annual volume abstracts 316 contemporary articles from the field of urology, accompanied by sparse illustrations. Many abstracts are accompanied by comments by the editor. These sometimes seem arbitrary, but are supported by references to other articles, past and present. The subject matter is divided anatomically, and there are separate author and subject indexes.

Although this is the best compilation of current urologic writing available to us, it is unfortunate that there appears to be some bias in the selection of publications to be reviewed; *e. g.,* some 22 articles are abstracted from the Scandinavian, but none from the Spanish, Italian, or German fields. No references were noted to the *British Journal of Urology.* The format and succinct reviewing are excellent.

—*CHARLES W. HOFFMAN, Jr., Lt. Col., MC, USA*

New Books Received

Books received by the *U. S. Armed Forces Medical Journal* are acknowledged in this department. Those of greatest interest will be selected for review in a later issue.

THE POSTURAL COMPLEX, Observations as to Cause, Diagnosis and Treatment, by *Laurence Jones*, M. D. 156 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1955. Price $9.75.

MODERN TRENDS IN PSYCHOSOMATIC MEDICINE, edited by *Desmond O'Neill*. 375 pages. Paul B. Hoeber, Inc., New York, N. Y., 1955. Price $10.50.

ROENTGEN INTERPRETATION, by *George W. Holmes*, M. D., and *Laurence L. Robbins*, M. D. 8th edition 525 pages; 371 illustrations. Lea & Febiger, Philadelphia, Pa., 1955. Price $10.

ORAL AND DENTAL DIAGNOSIS With Suggestions for Treatment, by *Kurt H. Thoma*, D. M. D., F. D. S. R. C. S. Eng., Hon. F. D. S. R. C. S. Edin., and *Hamilton B. G. Robinson*, D. D. S., M. S. 4th edition. 449 pages; 928 illustrations; 55 in color. W. B. Saunders Co., Philadelphia, Pa., 1955.

COUNSELING IN MEDICAL GENETICS, by *Sheldon C. Reed*. 268 pages. W. B. Saunders Co., Philadelphia, Pa., 1955.

THE JOSIAH MACY, JR. FOUNDATION, 1930-1955, A Review of Activities. 174 pages. The *Josiah Macy, Jr. Foundation*, New York, N. Y., 1955.

SYSTEMIC LUPUS ERYTHEMATOSUS: Review of the Literature and Clinical Analysis of 138 Cases, by *A. McGehee Harvey*, M. D.; *Lawrence E. Shulman*, M. D.; *Philip A. Tumulty*, M. D.; *C. Lockard Conley*, M. D.; and *Edyth H. Schoenrich*, M. D. 437 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., 1955. Price $3.

EXPERIMENTAL PSYCHOLOGY, A Series of Broadcast Talks on Recent Research, by *A. J. Watson, Harry Kay, J. 'A. Deutsch, B. S. Farrell, Michael Argyle*, and *R. C. Oldfield*. Edited by *B. A. Farrell*. 66 pages. Philosophical Library, New York, N. Y., 1955. Price $2.75.

THE BODY FLUIDS, Basic Physiology and Practical Therapeutics, by *J. Russell Elkinton*, M. D., and *T. S. Danowski*, M. D. 626 pages; illustrated. Williams & Wilkins Co., Baltimore, Md., 1955. Price $10.

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, Volume 63, Art. 1, pages 1-144, July 15, 1955. Editor: *Roy Waldo Miner*. "The Regulation of Hunger and Appetite." Conference Chairman and Consulting Editor: *Franklin Hollander*. 143 pages; illustrated. The New York Academy of Sciences, New York, N. Y., 1955. Price $3.

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, Volume 61, Art. 3, pages 637-736, July 8, 1955. Editor: *Roy Waldo Miner*. "Bioflavonoids and the Capillary." Conference Co-Chairmen: *Gustav J. Martin* and *Albert Szent-Györgyi*. Consulting Editor: *Gustav J. Martin*. 98 pages; illustrated. The New York Academy of Sciences, New York, N. Y., 1955. Price $3.

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, Volume 60, Art. 5, pages 541-806, April 27, 1955. Editor: *Roy Waldo Miner.* "Recent Advances in the Study of the Structure, Composition, and Growth of Mineralized Tissues." Conference Co-Chairmen: *Roy O. Greep* and *Albert E. Sobel.* Consulting Editor: *Roy O. Greep.* 265 pages; illustrated. The New York Academy of Sciences, New York, N. Y., 1955. Price $4.

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, Volume 60, Art. 6, pages 807-964, April 30, 1955. Editor: *Roy Waldo Miner.* "Instrumentation." Conference Chairman and Consulting Editor: *Joseph Greenspan.* 157 pages; illustrated. The New York Academy of Sciences, New York, N. Y., 1955. Price $3.

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, Volume 60, Art. 7, pages 965-1160, June 2, 1955. Editor: *Roy Waldo Miner.* "Molecular Events in Differentiation Related to Specificity of Cell Type." Conference Chairman and Consulting Editor: *H. Clark Dalton.* 195 pages; illustrated. The New York Academy of Sciences, New York, N. Y., 1955. Price $3.50.

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, Volume 60, Art. 3, pages 509-520. Editor: *Roy Waldo Miner.* "New Age Determinations by the Lead Method," by *J. Laurence Kulp, George L. Bate,* and *Bruno J. Giletti.* 10 pages. The New York Academy of Sciences, New York, N. Y., 1955. Price $0.50.

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, Volume 60, Art. 4, pages 521-540. Editor: *Roy Waldo Miner.* "A General Theory of Association," by *Robert Ginell.* 20 pages. The New York Academy of Sciences, New York, N. Y., 1955. Price $0.75.

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, Volume 61, Art. 2, pages 281-636, May 27, 1955. Editor: *Roy Waldo Miner.* "Hydrocortisone, Its Newer Analogs and Aldosterone as Therapeutic Agents." Conference Chairman and Consulting Editor: *Joseph W. Jailer.* 355 pages; illustrated. The New York Academy of Sciences, New York, N. Y., 1955. Price $4.50.

DIFFERENTIAL DIAGNOSIS OF LEUKOPLAKIA, LEUKOKERATOSIS AND CANCER IN THE MOUTH, by *Ashton L. Welsh,* M. S., M. D. American Lecture Series, Publication Number 267, A Monograph in American Lectures in Dermatology, edited by *Arthur C. Curtis,* M. D. 62 pages. Charles C Thomas, Publisher, Springfield, Ill., 1955. Price $2.50.

SEXUAL PRECOCITY, by *Hugh Jolly,* M. A., M. D. (Camb.), M. R. C. P. American Lecture Series, Publication Number 200, A Monograph in The Bannerstone Division of American Lectures in Endocrinology. Edited by *Willard O. Thompson,* M. D. 276 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1955. Price $6.75.

SURGERY OF THE STOMACH AND DUODENUM, A Handbook of Operative Surgery, by *Claude E. Welch,* M. D., D. Sc. (hon.). Illustrated by *Muriel McLatchie Miller.* 2d revised edition. 370 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1955. Price $9.

IONIC INTERPRETATION OF DRUG ACTION IN CHEMOTHERAPEUTIC RESEARCH, by *Alexander V. Tolstoouhov,* M. D., Ph. D., 276 pages; illustrated. Chemical Publishing Co., Inc., New York, N. Y., 1955. Price $10.

NEUROGLIA, Morphology and Function, by *Paul Glees,* M. A., Ph. D., M. D. American Lecture Series, Publication No. 260, A Monograph in American Lectures in Neurology. Edited by *Charles D. Aring,* M. D. 111 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1955. Price $5.

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